1957

ANNUAL REPORT
DEPARTMENT OF WATER AND SEWERS
CITY OF CHICAGO
RICHARD J. DALEY, MAYOR

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THE OLD WATER TOWER . . . symbol of Chicago's past signifying the great faith of her early citizens in their city's future . . . a monument to the vision and skill of waterworks engineers of a pioneering era. Built in 1867, it withstood the Great Fire of 1871. It stands today at the intersection of Michigan and Chicago Avenues, no longer in use, but an ever-present reminder of a past that gave birth to one of the great cities of the world.

March 1, 1958

The Honorable Richard J. Daley, Mayor
The Honorable Members of the City Council
City of Chicago, Illinois

Gentlemen:

With the close of 1957, the Department of Water and Sewers has completed its fifth year of operation. It was on January 1, 1953, that the water works system and the sewer system operations were combined under this new Department of Chicago's City Government.

This report describes briefly and pictorially, the activities of the Department during the year in a manner which we believe will best be understood by the public and others who may be interested in the operations of these two important services—both so vital to the life and welfare of the citizens of Chicago.

For those who may be interested in more detailed and technical data on the operations of the two systems, two separate supplements to this report have been prepared and are available for distribution upon request, one covering the operation of the water works system and the other covering the operation of the sewer system.

In 1957, 373.05 billion gallons of water were pumped to users, $36,660,868 were collected in the payment of water bills, 6.4 miles of large feeder mains and 19.6 miles of small mains were constructed in the distribution system, and 34¾ miles of sewers were constructed in the sewer system ranging in size up to 14 feet in diameter. In addition, new boilers and pump replacement installations in the pumping stations increased the total pumping capacity of the stations from 2480 million gallons a day to 2620 million gallons a day, a net increase of 140 million gallons a day.

The City Council enacted legislation increasing the water rates by 33-1/3% to finance planned capital improvement projects in the water works system, amounting to an estimated $154,592,000 during the period 1958 through 1962, as well as to cover the rising cost of operation and maintenance of the system. The new rates were placed in effect by the Department on May 1, 1957. It is pointed out that, even with this recent increase, Chicago's water rates are lower than those of most large cities in the country. In a recent survey it was found that the cost to the user of 10,000 gallons of water in Chicago was less than in 12 of the 15 large cities included in the survey.

The employees of the Department functioned smoothly and effectively all during the year. As a result of their performance we encountered no unusual incidents in our routine activities of keeping the vast Chicago water works and sewer systems operating at their optimum capacity. We wish to publicly express our appreciation to the employees for the commendable manner in which they discharged their responsibilities.

Further, we wish to thank you, Mr. Mayor, the Members of the City Council, other government agencies, industrial groups, and the public for the fine cooperation and assistance which has contributed so greatly to the progress made by this Department during the past five years.

Respectfully submitted,

JAMES W. JARDINE

Commissioner of Water and Sewers

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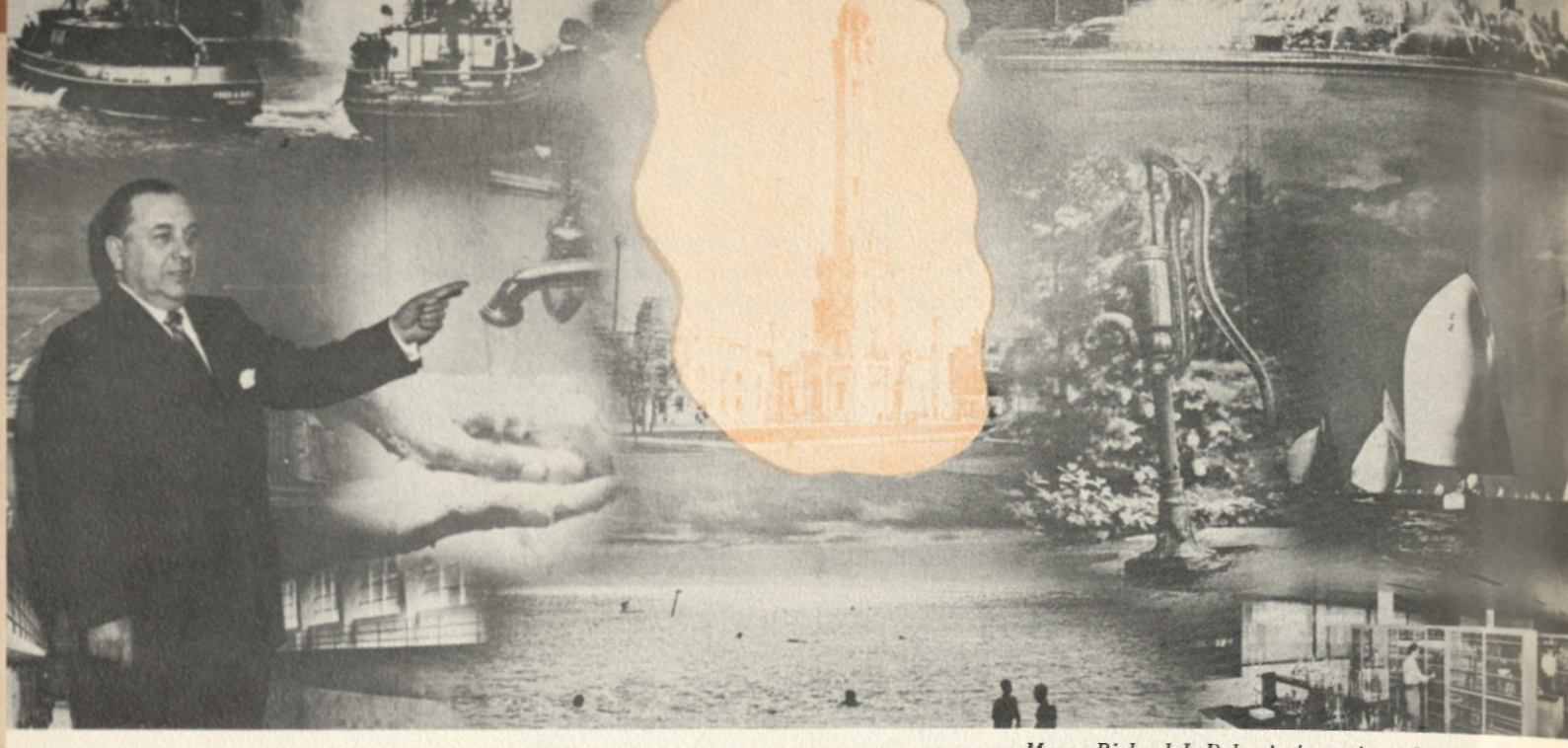
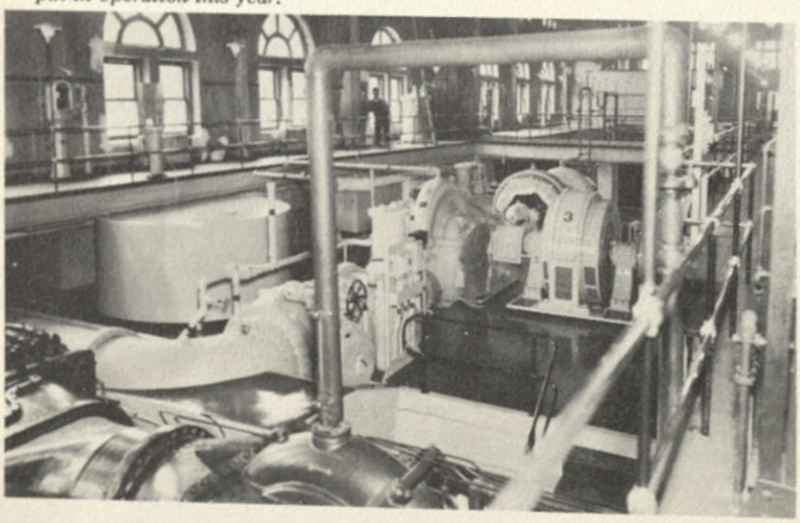


Mayor Richard J. Daley in front of mural at South District Filtration Plant during inspection trip.

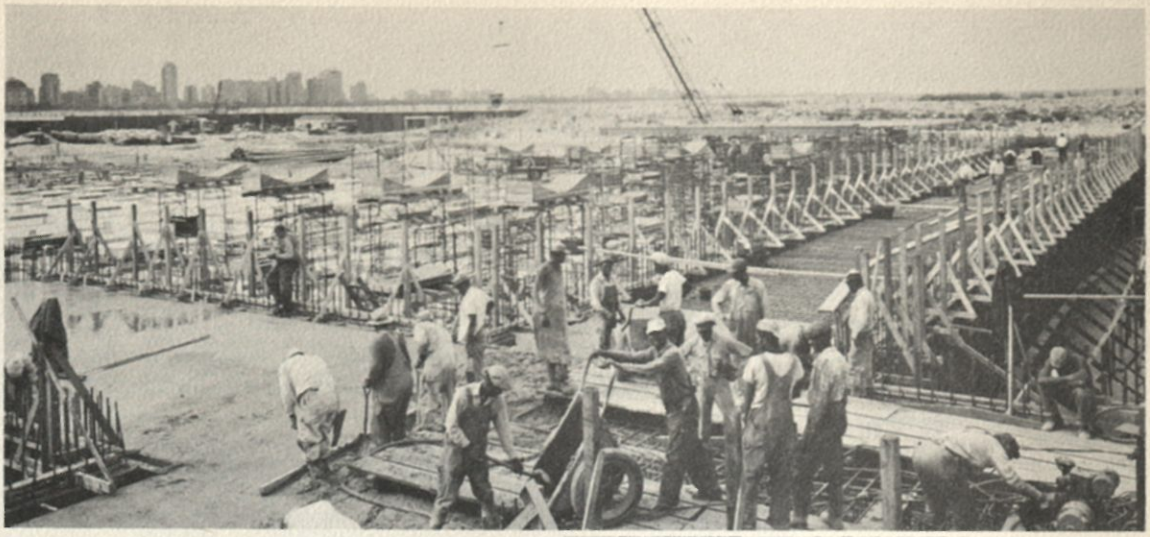
1957 Highlights

- 373,050,000,000 gallons of water were pumped in 1957, or an average of 1,022,055,000 gallons a day. The peak hour was at the rate of 1,701,000,000 gallons a day at 3:00 P.M. on August 2, and the peak days for the year were August 1 and 2, when the total pumpage for the day was 1,327,000,000 gallons.
- The water distribution system was reinforced and extended during the year by the construction of 26 miles of water mains—6.4 miles of feeder mains 24" in diameter and larger, and 19.6 miles of water mains of less than 24" in diameter—23.37 miles of which were in service by the end of the year.

New 50 million gallon per day pumping unit—one of four put in operation this year.

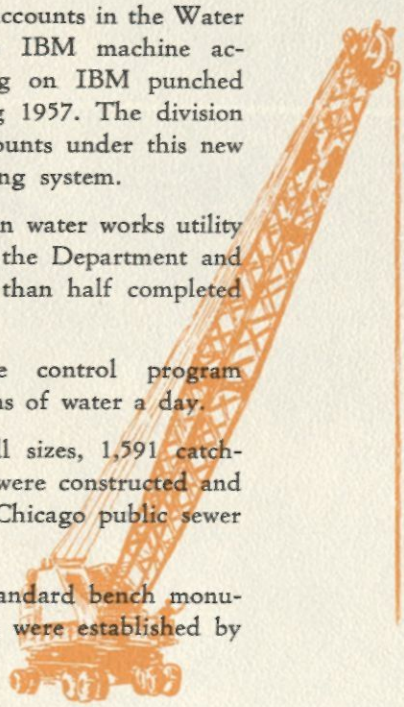


- A new 80 million gallon a day capacity steam turbine driven centrifugal pump was placed in service at the Central Park Pumping Station; 2 new 50 million gallon a day capacity electric motor driven centrifugal pumps were placed in service at the Chicago Avenue Pumping Station; and a new 50 million gallon a day electric motor driven centrifugal pump was placed in service at the 68th Street Pumping Station. These 4 new pumps will provide a net increase of 140 million gallons a day in the pumping capacities of these stations.
- The fourth of 4 new high pressure steam boilers was installed and placed in operation at the Western Avenue Pumping Station and 2 new high pressure steam boilers were installed and placed in operation at the Mayfair Pumping Station.
- A water rate increase of 33-1/3% was placed in effect on May 1, to finance planned capital improvements, as well as to cover rising costs of operation and maintenance.
- Design was started on the new Southwest Pumping Station and the connecting tunnel project; and on additional units to increase the capacity of the South District Filtration Plant.
- Construction proceeded at a good pace during the year on the new Central District Filtration Plant and its connecting tunnels, and on the 16 foot tunnel in 79th Street.

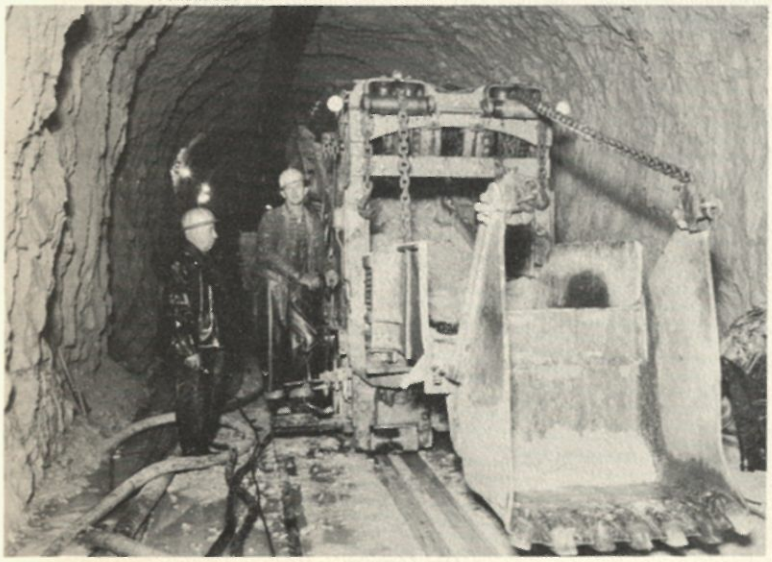


Above—Pouring concrete for filter gallery in new Central District Filtration Plant. Right—Feeder main construction under Northwest Expressway.

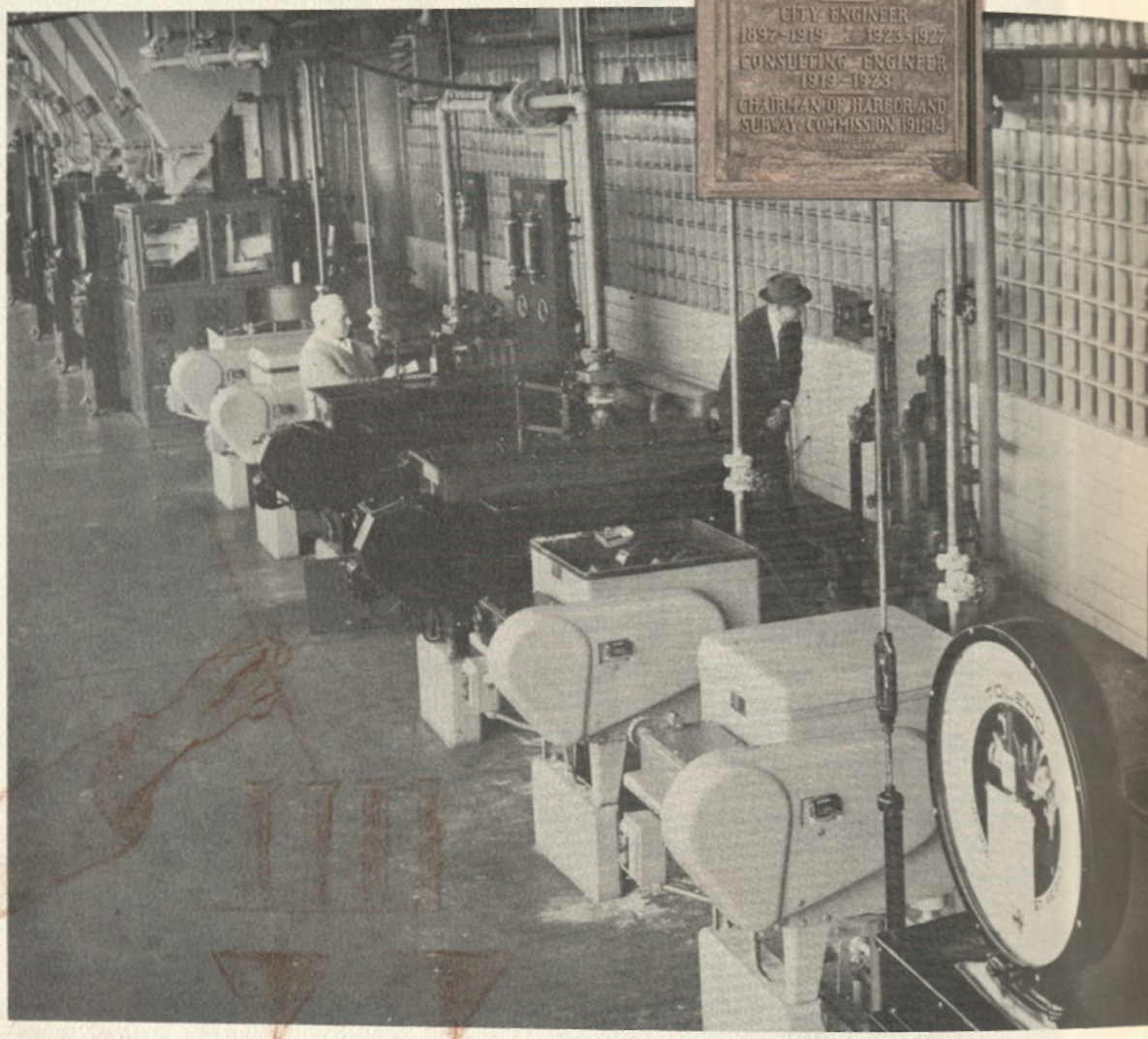
- Conversion of the metered accounts in the Water Collection Division to the IBM machine accounting system and billing on IBM punched cards was completed during 1957. The division now bills some 487,246 accounts under this new machine punched card billing system.
- The installation of a modern water works utility type accounting system for the Department and the Water Fund was more than half completed during the year.
- The underground leakage control program saved over 11,000,000 gallons of water a day.
- 34¾ miles of sewers of all sizes, 1,591 catchbasins and 1,245 manholes were constructed and placed in operation in the Chicago public sewer system.
- 117 street grades and 54 standard bench monuments and ordinary benches were established by the Bureau of Sewers.



Below left—Mucking machine in the new 79th St. Tunnel. Below right—Reservoir at new Central District Filtration Plant.



John Ernst Erickson served the City of Chicago as Assistant City Engineer for 43 years, during which time the many satellite water works in the Chicago Metropolitan Area were welded into the world's largest water works system. Mr. Erickson built the first tunnels in rock, introduced the modern centrifugal pumping equipment, and urged filtration of the water. Four of the present 11 pumping stations and three of the 5 major tunnel systems were built under his direction. He also started Chicago's experimental filtration plant. In 1898 he designed a special type of bascule bridge for the city which avoided the payment of heavy royalties. The commemorating plaque, reproduced to the right, is located on the Old Chicago Water Tower.



New Rotodip feeders (foreground) used to feed chemicals in liquid form. These six feeders replace 27 dry chemical feed machines of the type shown in the background.

Purification

The chemical treatment of water at the South District Filtration Plant has been steadily improved during the past several years. Most of the changes have been in the completion of the liquid chemical feeding systems and in techniques to improve the efficiency of the use of these chemicals. The South District Filtration Plant has now been in operation since August of 1945 and complete filtration has been in effect since May of 1947. As may be expected, plant equipment and appurtenances are beginning to show some signs of wear and must be repaired or replaced as needed to keep the plant operating most effectively. Consequently, maintenance costs are becoming a more significant part of the total cost of operations at the South District Filtration Plant.

PROCESS IMPROVEMENTS—The conversion to liquid chemical feeding systems was essentially completed during 1957. A second "Rotodip" feeder and two plastic lined concrete bins were added to the liquid alum system. The two concrete tanks that had been built especially for liquid iron, along with new chemical pumps and discharge piping were finished and placed in service. Two upper dry storage bins were plastic lined and equipped with elevation gauges and two Rotodip feeders were added to the liquid iron system. "Liquid Iron" is nothing more than high purity spent pickle liquor obtained from steel plants where it is a by-product of the treating of iron with sulfuric acid. Improvements were also made in the carbon feeding system where the activated carbon, as a fine black powder, is received in railroad hopper cars and unloaded into tanks where it is mixed into water in the amount of one pound of carbon per gallon to form a slurry, and then fed through Rotodip feeders to the point of application. The average monthly consumption of activated carbon in 1957 was 250,000 pounds and it is now possible to store more than this amount of carbon as a slurry at the Filtration Plant. During particularly bad taste and odor periods during the year, large quantities of activated carbon were used to reduce the taste and odor to a satisfactory level.

The six Rotodip feeders, pictured on page 10, are used in the three systems described above. Each of these machines has one moving part. They are simple to operate and easy to clean and maintain. These six feeders replace 27 complex dry chemical feed machines that would have to be used if these chemicals were fed in the dry form, as was formerly the case.

MAINTENANCE—The Filtration Plant filters have been in operation for 11 years. During that period most of them have been backwashed over 4,000 times. This means that each valve used in the backwashing procedure has had over 4,000 cycles of operation. By any standard, this is more useful time than should reasonably be expected from pieces of mechanical equipment of this type. A repair and replacement program covering this type of equipment is in effect. Under this program, the equipment has been kept in good operating condition or it has been replaced as needed so as to avoid any interruption in plant operations.

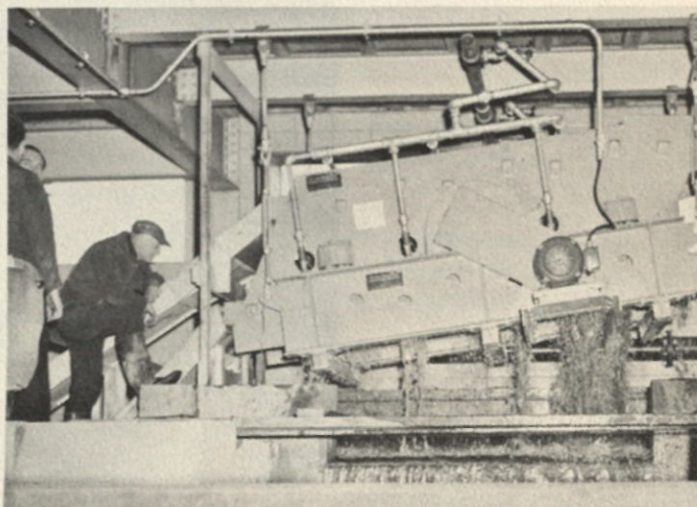
In some filtration plants filters have to be rebuilt every few years. Although the 80 filters at the South District Filtration Plant have been in operation 11 years, only two have been repaired and one filter is being prepared for rebuilding early in 1958. The screen, pictured on page 5, was recently installed for separating the sand and gravel. This screen uses the wet process which greatly speeds up the work of separation.

RESEARCH—A considerable amount of research is conducted at the South District Filtration Plant. The research projects cover a wide range of activities having to do with improving the quality of the water furnished to users and the methodology and equipment in use in the filtration operations.

There has been a need to learn what happens to a filter during the backwashing procedure. It is impossible to see what happens to the sand and gravel layers when a regular filter is backwashed, but at the South District Filtration Plant there is a model filter with glass sides which can be used for such experiments. In addition, a model filter was built of an 8 inch plastic tube.

Engineers check damage to breakwater at South District Filtration Plant.

New machine for screening sand and gravel for filter beds.



Since hydrofluosilicic acid (the material which is added to the water in order to increase its fluorine content for the control of dental caries), was not available in adequate supply for all of 1957, considerable experimentation was carried on to permit the efficient utilization of other available flouride containing chemicals.

In the laboratories, the use of the electron microscope for the rapid detection of coliform bacteria was continued. Bacteriological results were in this manner speedily obtained from water samples taken before and after water main sterilization and from locally contaminated areas during emergencies such as that following the July 1957 flood. Further research on the use of this microscope in shortening the bacteriological test period was carried out.

The radiological monitoring of the raw and treated waters was consistently followed. The large number of nucleonic tests in the early part of 1957 produced a situation that proved the worth of this program. A new proportional counter, pictured on page 6, was added during the year to the equipment already available for radioactivity investigations.

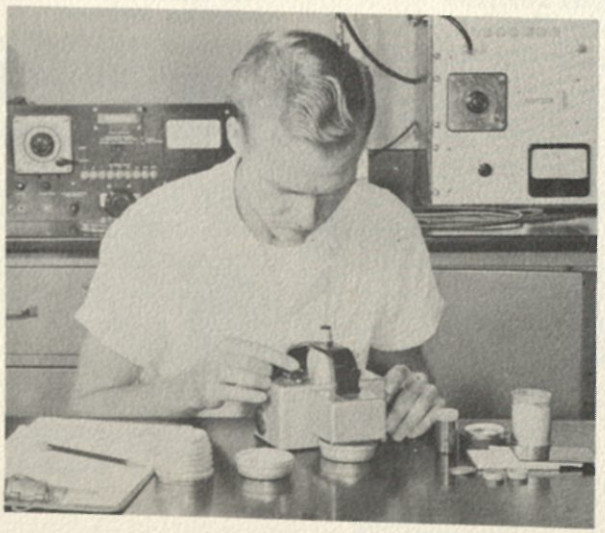
The careful control of fluoridation was continued. The raw and treated waters were regularly tested at frequent intervals each day for fluoride content. A picture of one of the laboratory chemists making the daily tests in fluoride content from water samples taken at various points in the South District Water Distribution System is shown on page 7.

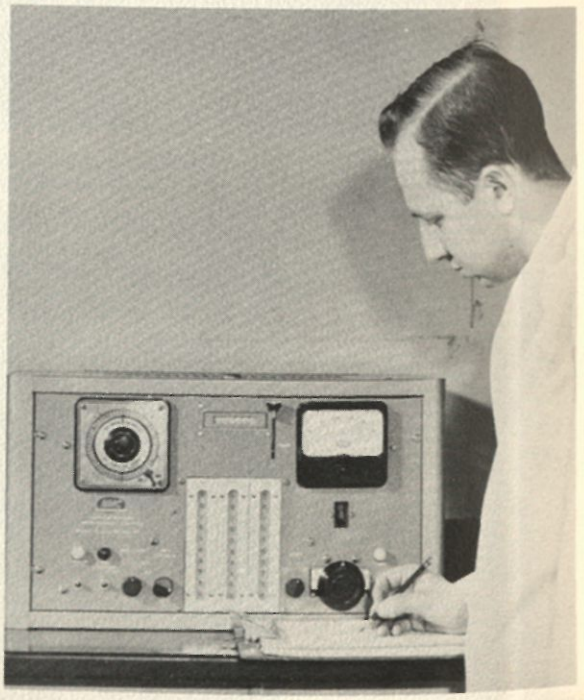
In addition, constant research and investigation into problems in the field of bacteriology, micro-biology and chemical treatment are being carried on by the capable staff of the laboratory.

WATER SAFETY CONTROL—The Water Safety Control Section is charged with the responsibility for the quality and purity of the water supply. In conjunction with the routine water quality control program, many diversified activities were undertaken to safeguard the water supply. Daily water samples were collected and submitted to the laboratories for bacteriological examinations and chemical analyses. The results of these tests indicated that the water being supplied to the consumer was of better bacterial quality than the standard recommended for a safe water, established by the United States Public Health Service. The electron microscope was of particular value in obtaining earlier bacterial results on chlorinated mains, and was also used in routine water quality tests to provide quicker results for control purposes.

An important phase of the control program is the operation of two control stations located at the head of the Chicago Avenue and Wilson Avenue tunnel systems. At these stations, hourly data are obtained and tests are performed and correlated with forecasted pumpage demand and dosages are recommended for the application of chlorine and fluorides to the water. These stations also function as 24 hour communication centers for any emergencies which may arise.

Laboratory technicians make routine checks for radioactivity in water. Man on right is using new Alpha Beta Gamma Proportional Counter.





Above—Chemical tests being performed at South District Filtration Plant chemical laboratory. Right—Routine tests being made by sanitary engineer at Chicago Avenue water safety control room.

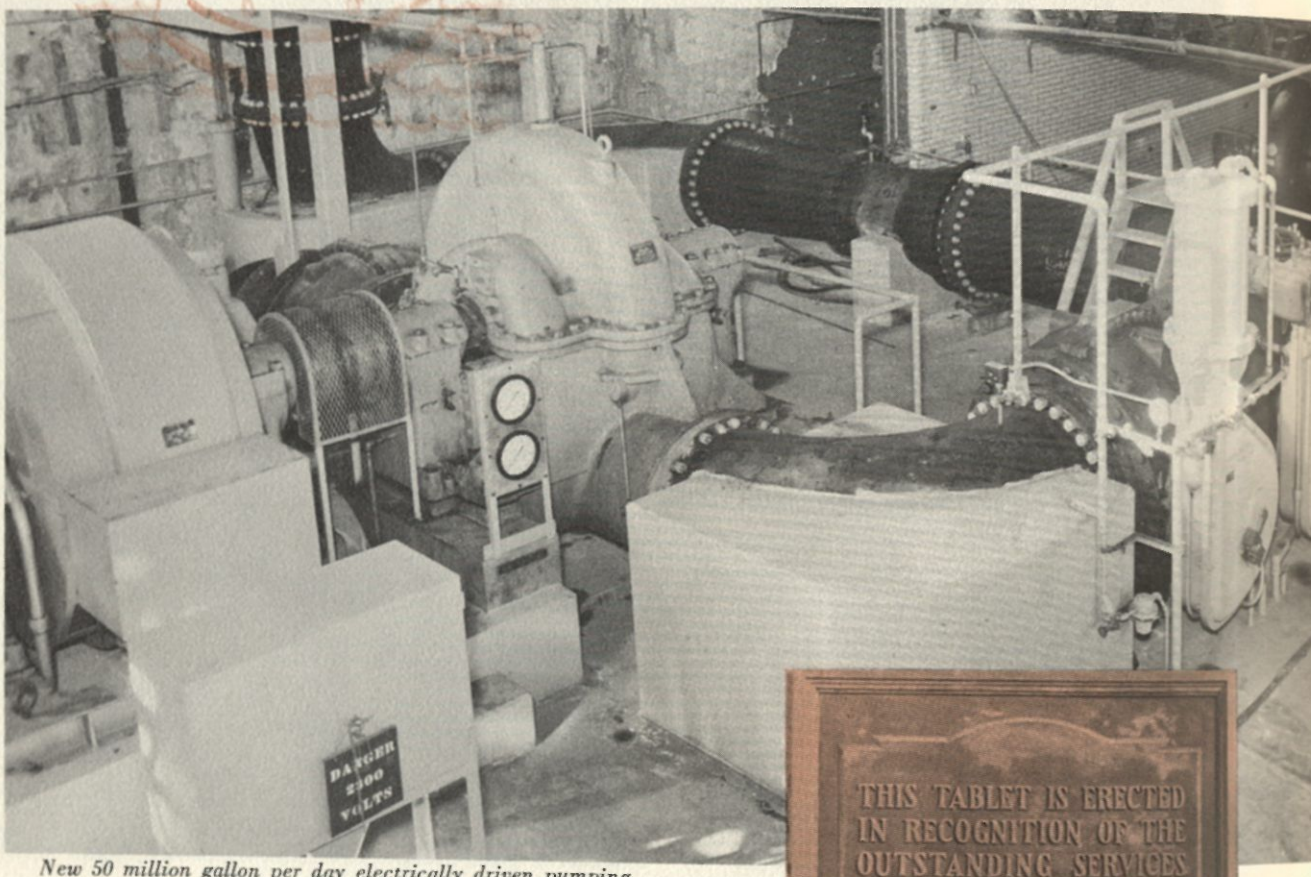
Purification

Weekly pollution surveys were conducted in the waterways of the Calumet River area, and periodic surveys were made of Lake Michigan in the North Shore area. Special surveys were also conducted in connection with excessive rainfall and outflow to Lake Michigan. Dredging and dumping operations in the lake, the adjacent waterways and along the shore were inspected and controlled.

The operations involving the sterilization with chlorine of new and repaired water mains and appurtenances were also supervised by this Section. Many sanitary inspections were conducted in connection with the new 79th Street Tunnel and the Central District Filtration Plant Connecting Tunnels.

The water Safety Control sanitary engineers report immediately at the scene of any major emergency in the water supply system to make surveys and to collect water samples. An around the clock vigil is maintained by the staff of the section to protect Chicago's water supply and the quality of the water delivered to the consumers.

Pumping



New 50 million gallon per day electrically driven pumping unit at the Chicago Avenue Pumping Station.

DeWitt Clinton Cregier superintended the erection of a new 8 million gallon per day pumping engine for Chicago's first municipally owned water works in 1853. Beginning in 1880, as City Engineer, he had much to do with the selection of early pumping equipment for Chicago. Perhaps Mr. Cregier's greatest contribution to the Chicago Water Works System was his design of the 36 million gallon a day pumping engine installed at the North side pumping station in 1872. He also designed numerous other mechanical appliances for water works use, including a double valve fire hydrant, many of which are still being used in Chicago. In 1889 Mr. Cregier was elected Mayor of Chicago for a two year term. The commemorating plaque, reproduced to the right, is located on the Old Chicago Water Tower.

Chicago water pumping stations furnished uninterrupted water supply service to all parts of Chicago and to 58 suburban communities throughout the year, which attests to the dependability of the Chicago Water System. During the year, the 11 stations pumped a total of 373.05 billion gallons of water with a peak day of 1.327 billion gallons.

Fluoridation of the water supply, which was inaugurated in 1956, was continued through 1957. The necessary chemicals were applied in prescribed quantities to the north and central tunnel systems from the Lake View and Chicago Avenue Pumping Stations.

The combined capacity of the eleven pumping stations in the Chicago Water System is now 2620 million gallons daily, an increase of 140 million gallons a day over the previous year. Two new pump installations at the Chicago Avenue Pumping Station and single pump replacements of greater capacity at Central Park Avenue and 68th Street Stations are responsible for this increase.

Installation of four new power boilers at the Western Avenue Pumping Station was completed in 1957. This new equipment replaces the original boilers which were in service for thirty years. A similar boiler replacement project is in progress at the Mayfair Pumping Station where two new boilers have been completed and two others are to be available for the summer load of 1958.

Pumping stations are now better equipped to meet the peak demands of the summer season than ever before, although the plentiful rainfall of 1957 reduced sprinkling loads and prevented the establishment of new pumping records.

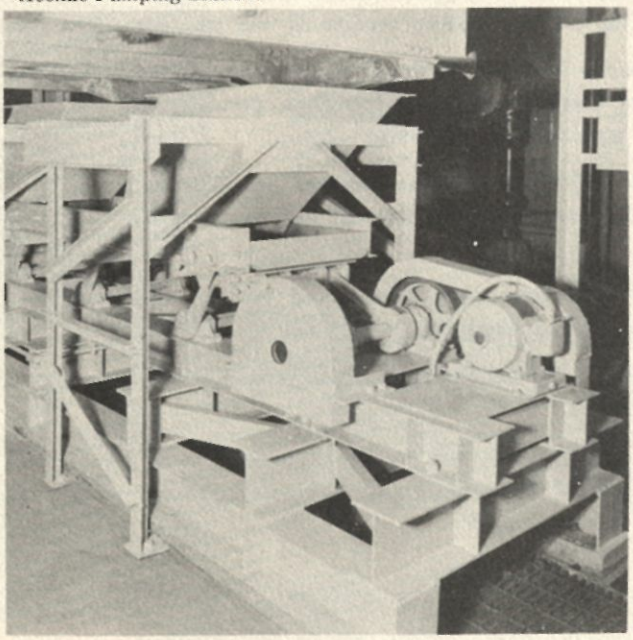
The thirty million gallon reservoir adjacent to Western Avenue Pumping Station was in daily service throughout the summer when it aided substantially in reducing the peak load imposed upon the South District Filtration Plant and connecting tunnel system.

The Four Mile Intake Crib was activated during the summer months to relieve the load on the Chicago Avenue tunnel system.

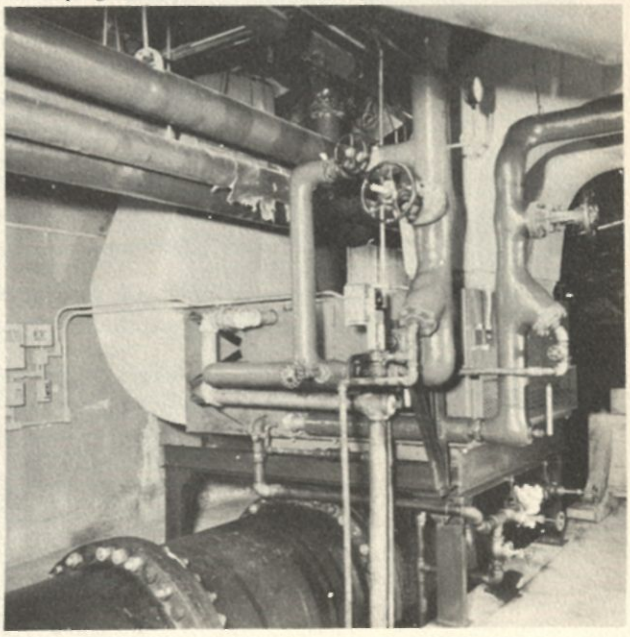
The Pumping Station Efficiency Section furnished valuable service throughout the year in testing of equipment, and helping to solve the various problems which develop in the operation of a complex water pumping system.

Pumping

New oscillating ash conveyor at Springfield Avenue Pumping Station.



Heating and ventilating equipment installed this year in the pump room of the Roseland Pumping Station.



Distribution

CONSTRUCTION—Chicago's public works and building construction programs continued at top speed during 1957. Housing, expressway, skyscraper, toll bridge and new street construction brought continuous pressure upon this division to relocate, rebuild, or extend the mains in the water distribution system.

A total of 26 miles of mains was constructed, of which 6.4 miles were feeder main 24" in diameter and larger and 19.6 miles were mains of less than 24" in diameter. 23.37 miles of the 26 miles constructed had actually been placed in service by the end of the year.

One of the special construction projects was the crossing of the North Branch of the Chicago River at Argyle Street to link two portions of the 42" Ainslie Street line from Leavitt Street to Cicero Avenue. This project required a new bridge to carry the 42" main because the existing wooden bridge was unsuitable. A new special type pipe bridge was designed and constructed to carry the main and since this construction would cross a navigable stream the plans were submitted to and approved by the U. S. Army Corps of Engineers. It required 273 feet of 42" main to link the two portions in Argyle Street on the east and west sides of the North Branch of the Chicago River. Approximately 143 feet of the 273 feet of 42" main were constructed on the pipe bridge. Since the pipe was exposed to outdoor temperatures it was covered with three layers of 1" fiberglass insulation, a 15 pound tarred felt covering and a final covering of protective sheet aluminum secured with aluminum strapping to insure against freezing.

To complete the Ainslie Street main link between Thomas Jefferson and Mayfair Pumping Stations, 625 feet of 42" main were constructed in the Edens Highway underpass at Lawrence Avenue. The Ainslie Street main was connected to the existing 42" main in Cicero Avenue without any interruption of service which would have resulted if the standard tee connection had been used. Instead, a 42" x 36" tapping connection was installed to join the two mains. This is the largest tapping connection in Chicago's water distribution system.

7,280 feet of 24" main were constructed from Avondale and Palatine Avenues in a northwesterly direction to the high ground at the perimeter of the city where it has been difficult to maintain adequate pressures.

845 feet of 36" main were constructed in Lexington Street from Laramie Avenue to Lockwood Avenue to reinforce the service to the midwestern section of the city and some western suburbs.

390 feet of 16" pipe were temporarily installed on the bridge over the Calumet River at 130th Street to insure adequate supply east of the river and in Hegewisch pending the installation of a permanent 24" line, scheduled for construction in 1958.

1,190 feet of 24" and 200 feet of 16" main were constructed in 37th Street and Federal Street respectively in advance of schedule to take advantage of pavement removal and a Chicago Housing Authority easement.

1,292 feet of 36" and 94 feet of 30" main were constructed in a new 66th Street relocated to accommodate the Calumet Skyway Toll Bridge.

In addition, 1004 feet of 36" main were constructed in Kingston Avenue to replace an abandoned main in Anthony Avenue.

19.6 miles of service mains, 6 inches to 16 inches in diameter, were constructed for new housing developments, ordinary main replacements and fire protection. 953 fire hydrants and 385 valves 4 inches to 36 inches in size were installed in 1957.

42 inch Ainslie Street main crossing under Northwest Expressway at Lawrence and Cicero Avenues.

Construction sequence of 42 inch thermally insulated main installed on specially built steel decked bridge over North Branch of Chicago River. Sheet aluminum cover protects insulation.

Looking Southwest from Prudential Building Plaza. Workmen remove 24 foot by 6 foot access panel to viaduct pipe gallery under sidewalk.

A real estate building program east of Chicago's loop inaugurated a new type of water main construction in the water utility field. An "Air Right" subdivision bounded by Beaubien Court, Wacker Drive extended, Lake Shore Drive and Randolph Street was developed in accordance with Chicago's Lake Front Ordinance. This area constitutes the terminal of the Illinois Central Railroad and is 12 feet below the surface of Michigan Avenue. All streets in the area are built on bridges rising to a maximum level of 40 feet above the railroad tracks. This type of construction required that water main extensions into the area be elevated to the higher grade and presented a new and unique problem in construction.

The first stage of an over-all system of mains to supply the subdivision was designed to furnish external fire protection to a 42-story building bounded by Lake Street, Stetson Avenue, Randolph Street and Beaubien Court. The ordinary domestic water supply and fire protection supply were furnished from the existing 12-inch underground main in Beaubien Court.

Water supply requirements of the development made it necessary to install a 24-inch feeder main. This main was constructed eastward in Lake Street to Stetson Avenue from a 24-inch main in Michigan Avenue. A connecting 18-inch steel main was constructed southward in Stetson Avenue and continued westward in Randolph Street for 200 feet. The 18-inch main and the east one-third of the 24-inch main were housed in a 7-foot gallery built in with the viaduct below the sidewalks. The nature of this steel pipe installation involved a thorough study of materials and equipment to be used and many construction innovations. The mains were sloped to conform to street grades and thus required anchorage to prevent downhill movement as a result of vibration caused by street traffic. The mains have built in flexibility to prevent damage from movement of the viaduct structure to which they are anchored. Expansion joints in the viaduct structure are matched by accordion type expansion joints in the line of pipe; these in conjunction with Dresser coupled joints allow for contraction and expansion and lateral movement as well as traffic vibration.

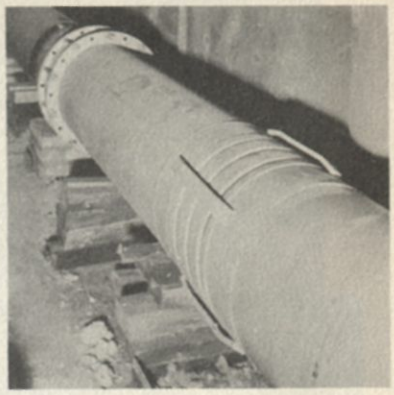
The exposure of the pipes to outside air temperatures necessitated protection against freezing. This was accomplished with an "electric blanket" composed of heating cables covered with two inches of thermal insulation. As a safety factor the heating system was divided into six independent sections automatically controlled by electronically-operated thermostats. Failure of any section will activate an alarm panel in the security office of the building.

The mains are completely insulated from the viaduct to guard against electrolysis in the pipe caused by stray currents from the electrified railroad below.

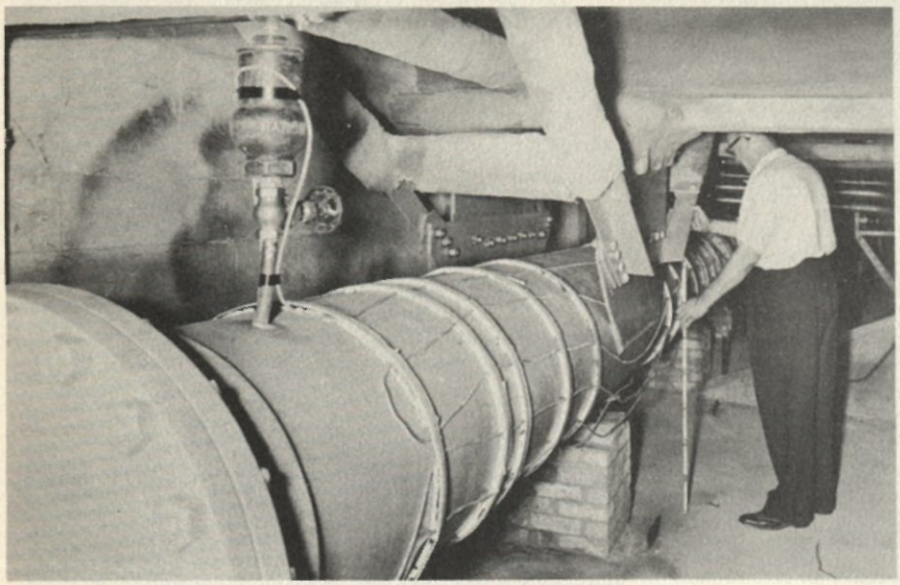
As of this writing the pipe line and heating system have undergone successfully one complete cycle of high and low temperatures.

Lower level of Beaubien Court looking south. Converted highlift machine raises 24 inch steel main for assembling.

Inside gallery mechanics tighten bolts on Dresser couplings joining lengths of 24 inch steel main. Wall brackets will carry electric conduit for pipe heating system.



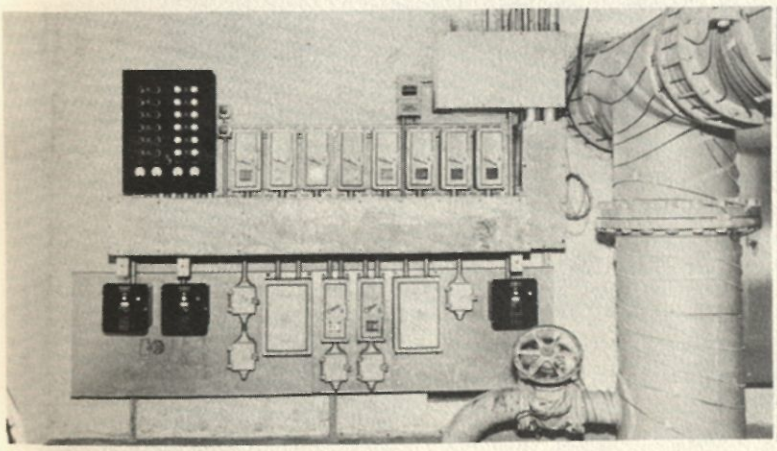
Accordion type expansion joint in line of main. Shipping supports welded across joint give protection during transport. Pipe is supported on temporary wood-block construction piers.



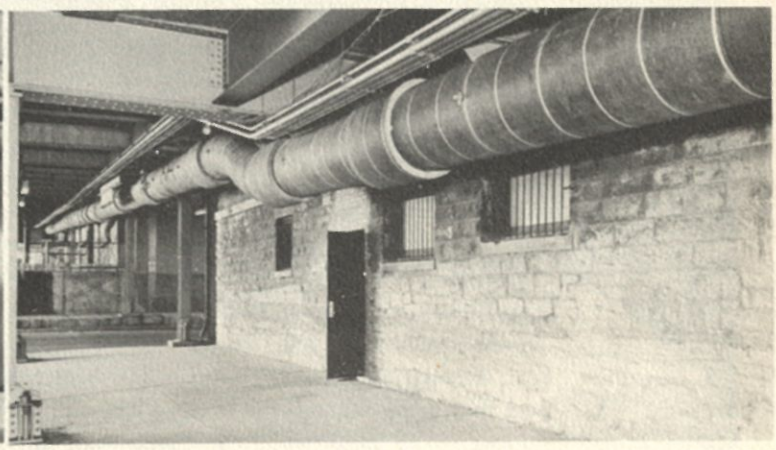
Gallery under Randolph Street looking west. Thrust anchor welded to pipe above supporting piers. Heating cables, strapped to main, are visible.

Thermal insulation being applied to 24 inch heated main. Note heating cables threaded through Dresser coupling and anchor bracket suspending pipe from viaduct structure. Conduit at right contains cables to supply heating system.

Distribution



One of 6 sectional control stations monitoring heating system. Black box at upper left is alarm panel.



Completed 24 inch heated and insulated main suspended from viaduct structure. Main enters gallery at far left. View is east from lower level of Michigan Avenue across Beaubien Court.

Maintenance crew revises connection between 24 inch mains in Packers and Exchange Avenues to repair leak. A defective 24 inch valve was replaced with a new 24 inch Chicago valve.

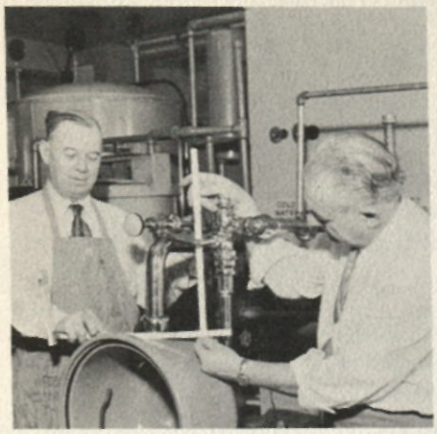
MAINTENANCE—Distribution system maintenance operations are carried on 24 hours a day. Work crews are on duty around the clock, with stand-by reinforcements on call, prepared to handle the repair of mains 4" to 54" in diameter as well as comparable size valves, hydrants, service pipes and meters. By communication with radio equipped maintenance trucks, work crews can be dispatched promptly at any hour to make emergency repairs in the system anywhere in Chicago.

The discovery of conditions which point up the need for repairs in the distribution system comes from information furnished by the public, the continuing surveys of the system conducted by the engineering staff through fire flow tests, dies tests and valve inspections, the surveys conducted by leak crews and the inspections made by inspectors investigating service complaints.

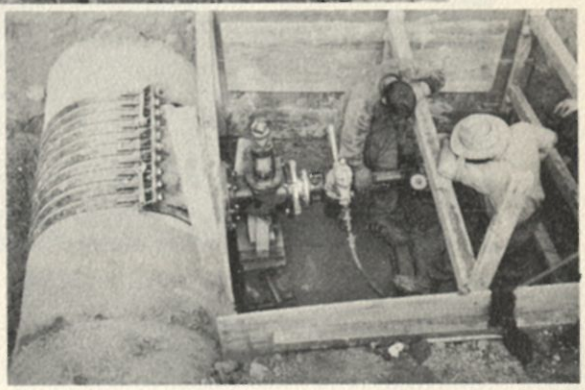
UNDERGROUND LEAKAGE—The prevention of unseen, unheard leakage in the over 4000 miles of underground water mains in Chicago's distribution system presents a problem of staggering proportions. A good water system can little afford to lose water through leakage, since its loss must be replaced by additional water which in turn, requires greater capacity in the overall system. Engineers of the division have developed a die test method for locating leaks which has saved the City millions of gallons of water annually and eliminated the expense of unnecessary exploratory searching for such leaks. The elimination of leaks reduces pumping requirements, damage to underground installations and thus, operating costs. By means of this continuous program to reduce leakage in the system, over 11 million gallons of water per day were saved in 1957.

PLUMBING TESTING LABORATORY AND INSPECTION—The activities of the Plumbing Section of the division are directed toward maintaining the good quality and preventing the contamination of the water on its way through the distribution system to the consumer. The inspectors enforce the provisions of the Chicago Plumbing Code which protects the public against health hazards in the water that may come from the installation of unapproved water-using appliances, poor plumbing design or workmanship, undersized piping and improper or inferior plumbing materials. Inspectors investigate all complaints of inadequate water supply, unusual water taste or odor, leakage and water waste, and take steps to eliminate the conditions giving rise to these complaints.

The Chicago Plumbing Testing Laboratory, a segment of the Plumbing Section, conducts several hundred tests each year on the various types of water-using appliances, devices and equipment before they are approved for use in Chicago to make certain that they have no mechanical defects and that their use will not be a source of contamination in the system. The public receives the full benefit of the laboratory findings through the plumbing inspectors' insistence that all water-supplied appliances and devices be of a type approved by the laboratory before permitting them to be installed.



Water using appliance being tested at Chicago Plumbing Testing Laboratory.



Two unusual tapping jobs—above, a 42 inch cast iron main is tapped for a 36 inch connection—below, tapping a 36 inch concrete feeder main with special tungsten carbide tipped cutter.

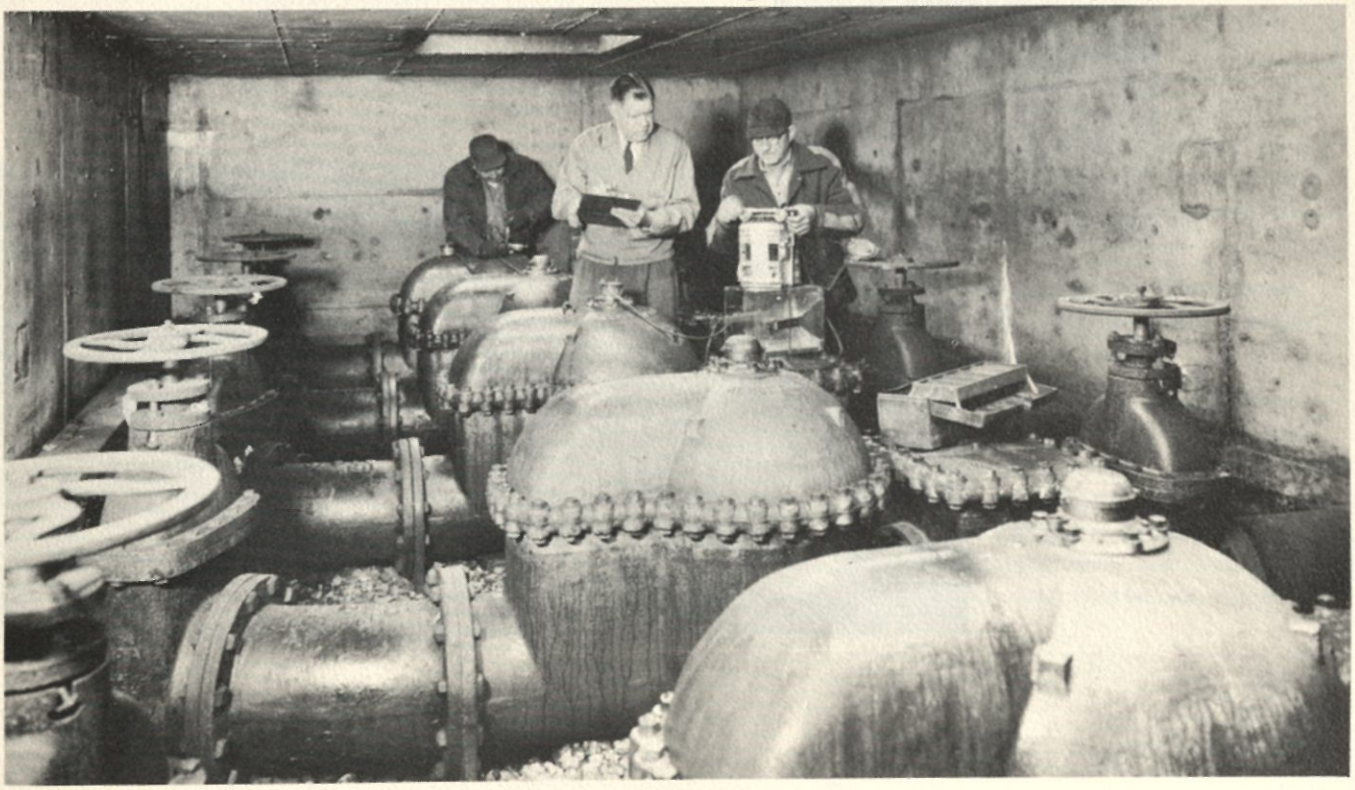
Distribution

METER TESTING AND CONTROL—Determination of proper service pipe and meter sizes so as to obtain accurate measurement of the water used in Chicago and its suburbs requires continuous tests and studies. Chicago uses meters in sizes 5/8 inch to 12 inches. Tests by the Meter Testing and Control Section have proven that the meter size must be properly matched with consumer requirements if meter registrations are to be accurate.

A Rate Recorder device designed and built by a department engineer permits determination of many important water use factors such as: hour of peak load, low load time during which suburban reservoirs can best be filled, quantities used for cooling exclusive of air conditioning, quantities necessary to various industries, and a history of the progressive increase in water used for air conditioning.

The Rate Recorder can simultaneously record on tape the performance of two meters for about eight days. The record reveals the rate of consumption at any given instant of the period recorded and also accurately measures the total amount of water used during the test.

Engineers take readings from Rate Recorder on two of six 12 inch meters supplying a southwest suburb. Meters are housed in a large vault under the street at Chicago city limit.



The Water Meter Division maintains control over all water meters installed in Chicago's Water System, including those installed by Plumbing Contractors. A complete permanent record of every meter is kept from the date of purchase until it is discarded. A record is also kept of each metered property showing the history of the meters that have serviced the property.

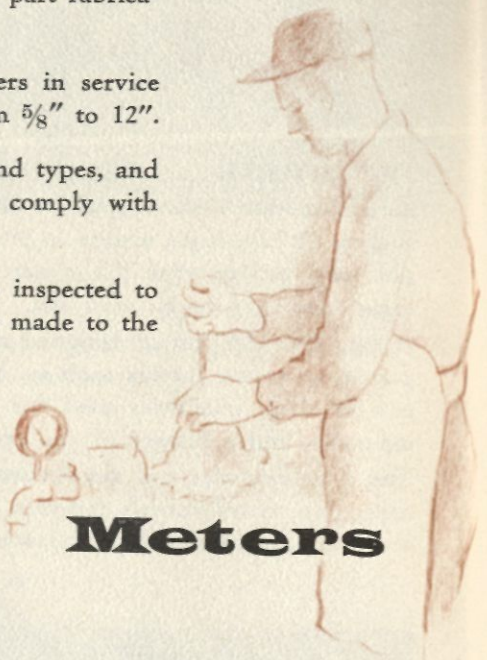
The Meter Shop tested for accuracy 22,511 meters in 1957. Of these, 19,038 meters were overhauled in the shop; 888 were new meters tested in the shop and 2,585 were new meters tested at the vendor's factories, under City supervision. Testing meters at the factories resulted in a saving to the City of over $4,000.00.

103,164 job orders were required to carry out the operations of the Meter Division during the year. These orders covered 15,520 meter repair jobs in the field and the balance covered meter tear down and reassembly jobs and meter part fabrication and rehabilitation jobs in the shop.

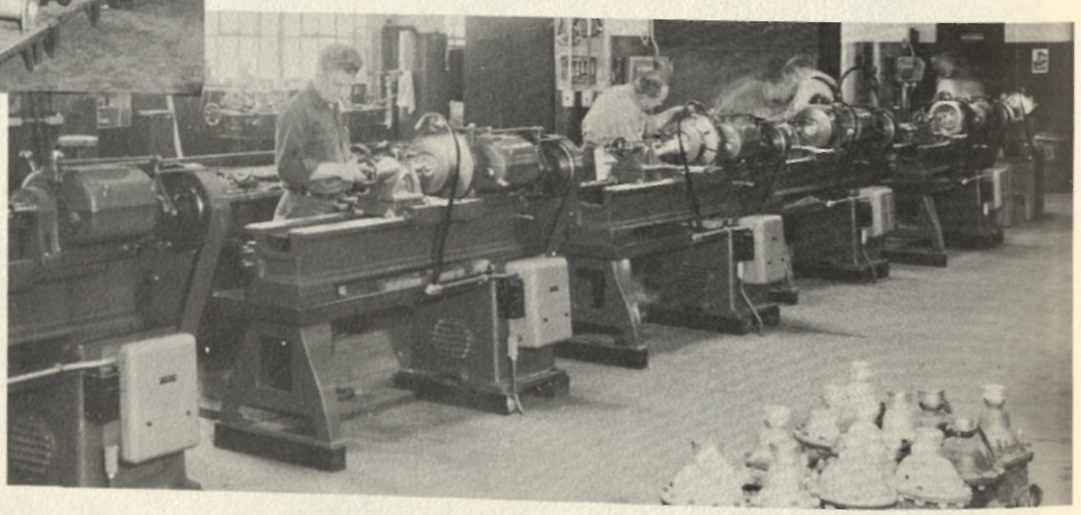
4,775 new water meter installations in 1957 brought the total meters in service in the system at the end of the year to 142,734 ranging in sizes from 5/8" to 12".

The Meter Division draws up specifications for meters of all sizes and types, and no meters are installed in the Chicago Water System unless they comply with such specifications.

After the meters are installed by the Master Plumbers, each job is inspected to ascertain if the installation is a proper one and a complete report is made to the Water Collection Division for billing purposes.



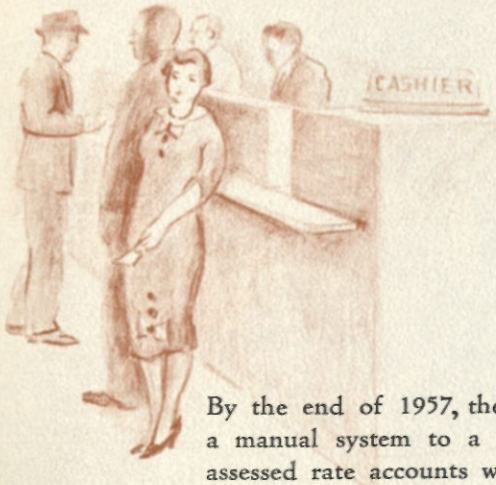
Meters



Left—Testing meters, both large and small, for accurate registration. Below—New lathe equipment at Meter Shop used to recondition meters.

Above and to the right—new electronic billing, posting and accounting machine installation showing Key Punch, Accounting Machines, Verifiers, Sorters, Reproducers, Collators, Interpreters and Calculator. Water bills are reproduced on punched cards ready for mailing.

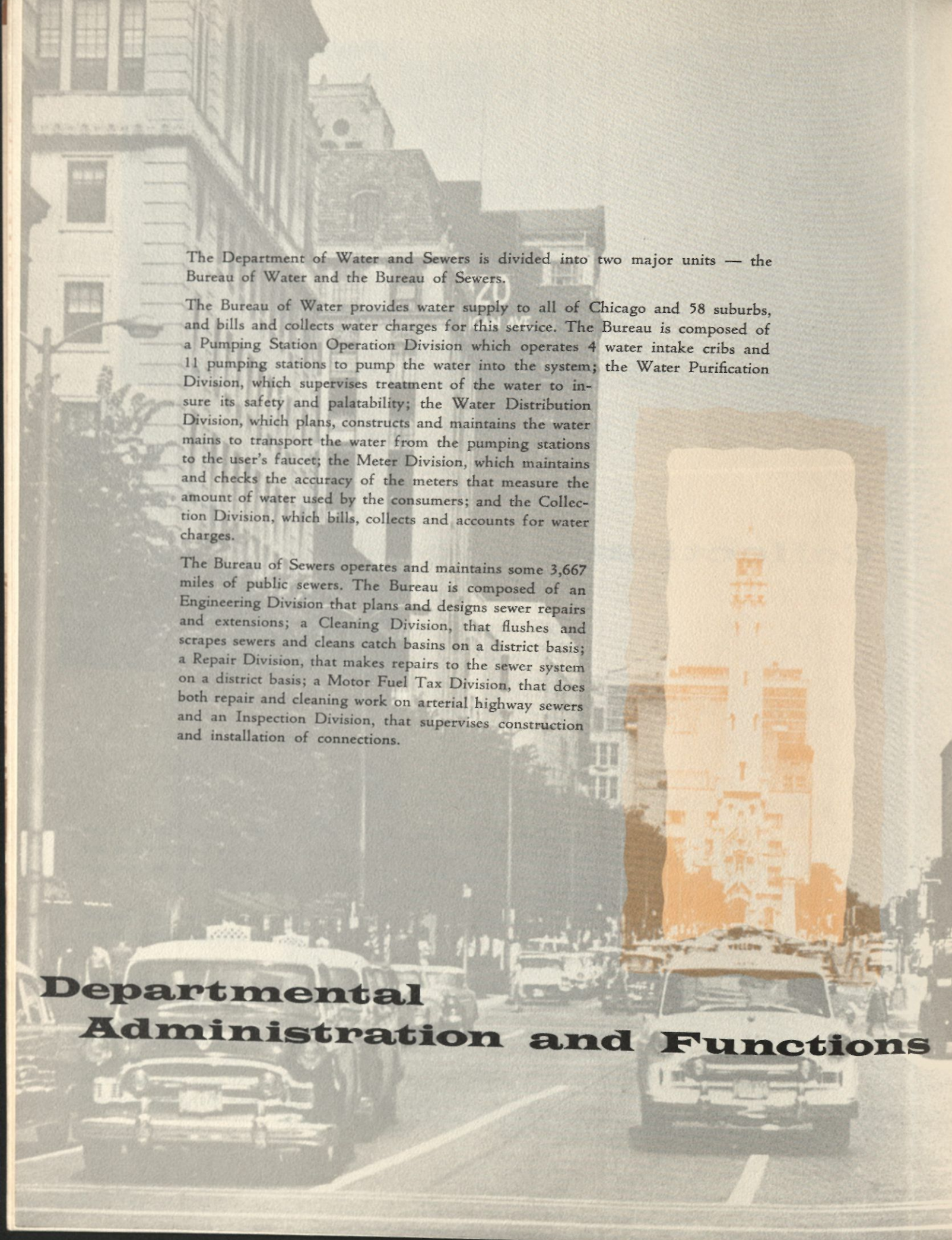
Collection



By the end of 1957, the conversion of the billing and accounting processes of the division from a manual system to a modern electronic machine punched card system for both metered and assessed rate accounts was completed. Some 487,246 accounts are now billed under the new machine process on punched cards ready for mailing to customers.

On May 1, 1957, in accordance with legislation passed earlier in the year by the City Council, a 33-1/3% increase in the water rates was put into effect, and on that date the division began mailing bills at the new rates.

Changing over to the new machine billing and posting system and procedures, revising the records to put the water rate increase into effect and making arrangements to repair the damage done in the offices of the division by the fire in the nearby Council Chambers in the City Hall on March 21, 1957, all combined to seriously complicate and add to the normal workload of the division during the year. Even so, the staff of the division was able successfully to handle the additional workload, maintain its billing and collection operations on a current basis and balance its accounts accurately without adding to its staff. A total of $36,660, 868 in water charges was collected by the division during 1957.



Departmental Administration and Functions

The Department of Water and Sewers is divided into two major units — the Bureau of Water and the Bureau of Sewers.

The Bureau of Water provides water supply to all of Chicago and 58 suburbs, and bills and collects water charges for this service. The Bureau is composed of a Pumping Station Operation Division which operates 4 water intake cribs and 11 pumping stations to pump the water into the system; the Water Purification Division, which supervises treatment of the water to insure its safety and palatability; the Water Distribution Division, which plans, constructs and maintains the water mains to transport the water from the pumping stations to the user's faucet; the Meter Division, which maintains and checks the accuracy of the meters that measure the amount of water used by the consumers; and the Collection Division, which bills, collects and accounts for water charges.

The Bureau of Sewers operates and maintains some 3,667 miles of public sewers. The Bureau is composed of an Engineering Division that plans and designs sewer repairs and extensions; a Cleaning Division, that flushes and scrapes sewers and cleans catch basins on a district basis; a Repair Division, that makes repairs to the sewer system on a district basis; a Motor Fuel Tax Division, that does both repair and cleaning work on arterial highway sewers and an Inspection Division, that supervises construction and installation of connections.

DEPARTMENT OF WATER AND SEWERS

James W. Jardine — Commissioner of Water and Sewers
Raymond D. Johnsos — Administrative Engineer

BUREAU OF WATER

W. W. DeBerard — Deputy for Water and Chief Water Engineer
H. H. Gerstein — Assistant Chief Water Engineer
J. A. Elger — General Secretary

PUMPING

J. L. Weeks — Mechanical Engineer in Charge

PURIFICATION

J. R. Baylis — Engineer of Water Purification

DISTRIBUTION

J. T. Garrity — Superintendent
T. F. Foley — Assistant Superintendent
E. Edelstein — Engineer

METERING

M. I. Sheridan — Superintendent

COLLECTION

J. J. Ellicott — Superintendent

BUREAU OF SEWERS

Thomas D. Garry — Deputy for Sewers
A. J. Schafmayer — Chief Engineer for Sewers
A. E. Cook — Administrative Assistant

INSPECTION

H. M. Forrey — Assistant Chief Engineer

DISTRICT REPAIR

J. Rostenkowski — Superintendent

DISTRICT CLEANING

W. Cullerton — Superintendent

CONSTRUCTION

R. McNamara — Superintendent

ENGINEERING

T. S. Ford — Engineer
C. E. Benson — Engineer of Assignments & Maintenance
D. Goldberg — Engineer of Construction

ARTERIAL REPAIR AND CLEANING

E. Gill — Superintendent

1957 Major Statistics

Water

POPULATION AND AREA SERVED

(Based on reliable estimates)

Population supplied:	
Chicago	3,800,000
Suburban (Year-end census as revised)	760,000
Total	4,560,000
Area served (in square miles):	
Chicago	221
Fifty-eight suburbs	147
Total	368

PER CAPITA CONSUMPTION

	Gallons Per Day
Chicago	240
Suburban	144
Average	224

CHEMICAL AND PHYSICAL QUALITIES OF WATER

Total hardness (as parts per million Calcium Carbonate)	132
Water temperatures: Intake (Dever Crib)	
Average	46.6°F.
Maximum	72°F.
Minimum	32°F.

PUMPAGE

	Gallons
Annual	
Chicago	333,151,000,000
Suburban communities and industries (metered)	39,899,000,000
Total*	373,050,000,000
*(Amount through Western Ave. Reservoir	1,353,000,000)
Annual Metered Consumption in Chicago (46.83%* of Chicago pumpage)	156,000,000,000
*(Percentage of Revenue from metered rates 77.12%)	
Daily	
Total daily average	1,022,055,000
Maximum day, Aug. 1 & 2	1,327,000,000
Maximum hour (rate) Aug. 2 3 P.M.	1,701,000,000
Daily average—Chicago	912,743,000
Daily average—suburban	109,312,000

PURITY CONTROL

Laboratory samples examined:

Bacteriological Laboratory	37,101
Chemical Laboratory	147,311
Microscopically for plankton	6,090
Electron Microscope	6,050
Total samples examined	196,552

BACTERIOLOGICAL RESULTS

Annual average coliform organisms per 100 ml*

	South District (filtered)	North & Central District (chlorinated only)
Raw	70.83	10.40
Plant outlet	0.0015	—
Pumping stations	0.009	0.166
Distribution system	0.028	0.092

*(U.S. Public Health Service standard for safe drinking water permits a maximum average of 1.0 coliform organisms per 100 ml.)

PURIFICATION TREATMENT

	Gallons
Complete Filtration Treatment	124,972,500,000
Chlorination Treatment only	250,441,380,000

CHEMICALS APPLIED—TONS

	Filtration Treatment	Chlorination Only
Chlorine	995	1,281
Aluminum Sulfate	4,211	—
Activated Carbon	1,516	—
Lime	1,674	—
Ferrous Sulfate	375	—
Ammonium Sulfate	389	—
Sodium Silicate	66	—
Hydrofluosilicic Acid	415	490
Miscl. Chemicals	44	—

SUPPLY

Crib intakes in service	4
Emergency shore intake	1
Miles of water supply tunnels under lake and land (6 to 16 feet in diameter)	63.1

PUMPING—1957

Pumping stations	11
Pumps available for service	53
Installed pumping capacity (Million gallons per day)	2,620

ANNUAL PUMPAGE (Million Gallons)

By electrically driven pumps	134,170
By steam driven pumps	238,880
Total annual pumpage	373,050
Coal used by steam powered pumps (tons)	149,687
Electric power used by electrically powered pumps. (kilowatt hrs.)	67,117,015

DISTRIBUTION

Water Mains: (in miles)	
In use—December 31, 1957	4,114.59
Extended	23.37
Abandoned	9.05
Net addition to system	14.32
Diameter of pipe (inches)	1 to 54
Fire Hydrants:	
In use—December 31, 1957	44,947
Installed	953
Abandoned	741
Net Increase	212
Gate Valves:	
In use—December 31, 1957	42,845
Installed	385
Abandoned	165
Net Increase	220
Pressure range in mains (lbs. per square inch)	25-70
Average pressure at curb (lbs. per square inch)	40
Miles of pipe tested for underground leakage	119.97
Underground main leakage stopped 1957—gallons per day	11,189,165
Premises inspected—house to house leakage survey	30,905
Repaired main breaks—4 inch to 36 inch in diameter	144

METERS:

In service—December 31, 1957	142,734
Installed by master plumbers	1,918
Installed by Water Distribution Division	3,457
Total	5,375
Removed	1,288
Net increase	4,087
Repaired on premises	13,628
Repaired in shops	16,434
Tested	22,511
Non-metered (assessed rate) services	346,312
Total Services (assessed & metered)	489,046

Sewers

Existing Sewer System:

Miles of Sewers	3,667.04
Catch Basins	194,705
Manholes	133,743

1957 New Sewer Construction:

Miles of Sewers—all sizes	34.75
Catch Basins	1,591
Manholes	1,245

Of the above, 1.92 miles of various sizes of sewers, 38 catch basins and 68 manholes were constructed by Bureau of Sewers work forces.

Inspections	211,015
Complaints Handled	17,084

Repairs:

Total Number of Sewer System Repair Jobs Completed	17,530
Main Sewer Breaks	511
Catch Basins	11,792
Manholes	4,736
Gutter Grates and Basin Outlets	491

Cleaning:

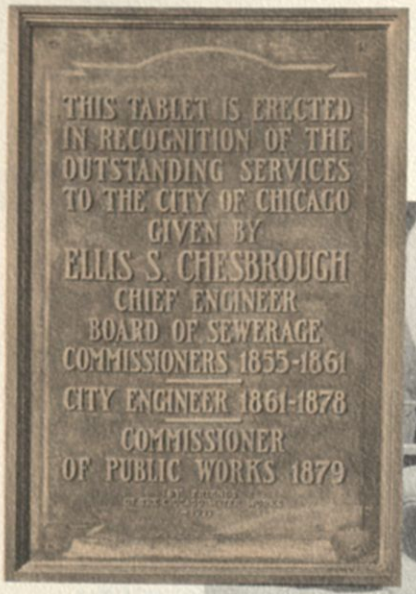
Dirt Removed in Cleaning Operations —Cubic Yards	220,671
Sewers Scraped—Feet	3,956,045
Catch Basins Cleaned	487,126
Street Grades Established and Approved by City Council	117
Standard Bench Monuments and Ordinary Benches Established	54

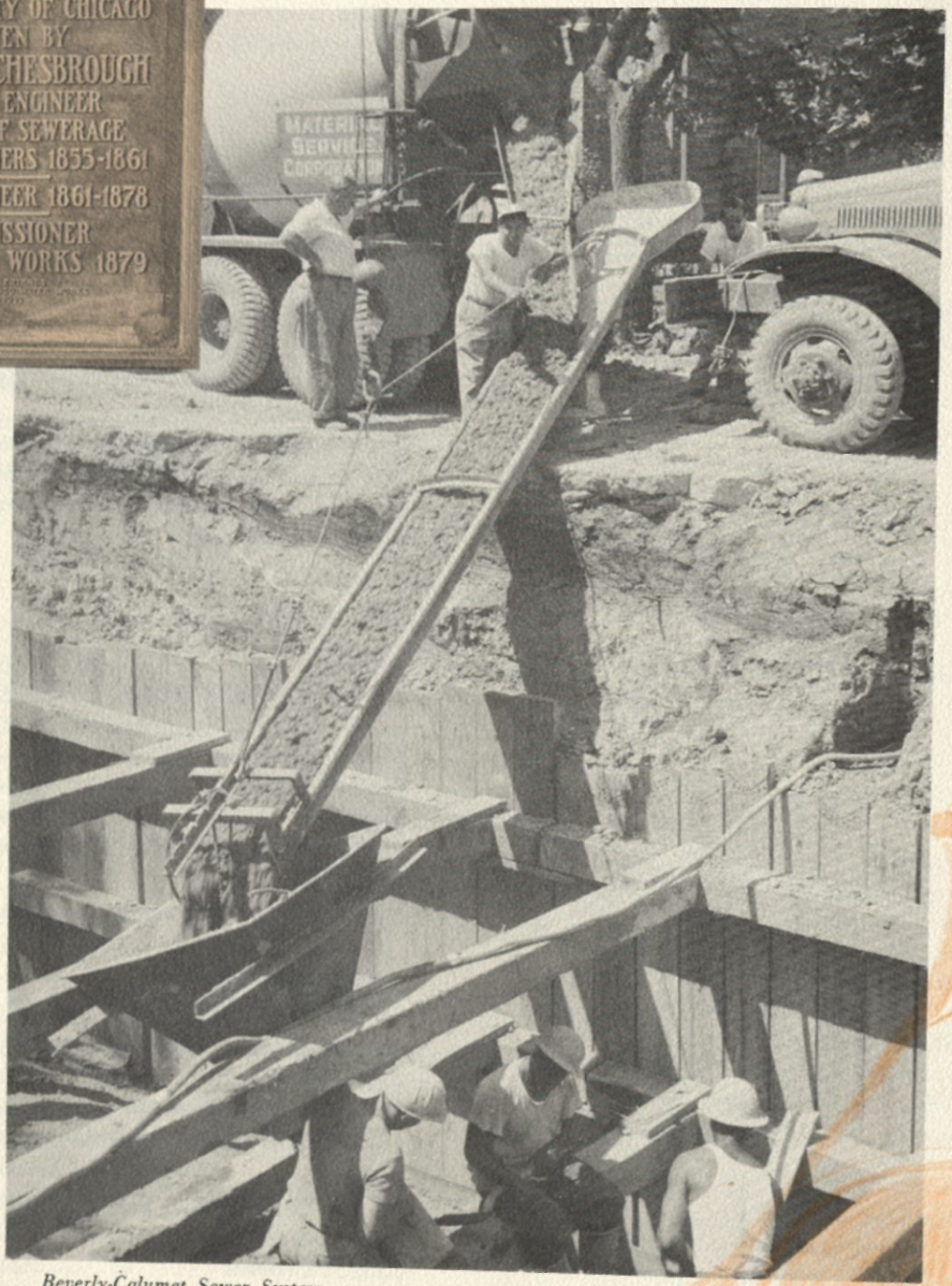
Receipts:

House Drain Permit Fees	$159,660
Other Permit Fees	26,100
Special Deposits	53,247
Out-of-town Sewer Connection Fees	61,104
Drain Layers' License Fees	28,750
Total Receipts	$328,861

Supplements covering complete 1957 water or sewer statistics are available upon request.

As Chief Engineer for the Chicago Sewerage Commission, Mr. Ellis Sylvester Chesbrough made a trip to Europe in 1856-57 to study the sewage system in large cities and upon his return directed the preparation of a plan for a comprehensive sewer system for Chicago. Later, upon his recommendation as Chief Engineer for the Board of Public Works, a 5 foot diameter brick tunnel was constructed under the lake to an intake two miles from shore. After the Great Fire of 1871, a second brick lined tunnel 7 feet in diameter, 6 miles in length, was constructed. While Chief Engineer of the Board of Public Works Mr. Chesbrough directed not only the water works developments of the city but its sewerage system, bridges and river tunnels. The commemorating plaque, reproduced to the left, is located on the Old Chicago Water Tower.





Beverly-Calumet Sewer System—
Pouring concrete for arch.

Sewers

During 1957, 34¾ miles of new sewers, built by various agencies, were added to the Chicago public sewer system. Of this total the Bureau's own forces built about 2 miles, including over ½ mile of sewer 6 feet in diameter or larger. 10¼ miles were constructed by contract under the sewer bond fund program, 7¾ miles of which are 5 feet to 14 feet in diameter. 6 miles were built by private contract, 7½ miles by the Board of Local Improvements under the special assessment program, and 9 miles of various sizes up to 4 feet were constructed in connection with expressways built by the State or City. Not included in the total are about 10 miles of small size sewers built only for drainage of expressways. Allowing for about 8½ miles of old sewers which were abandoned in the course of the new work, the net increase is 26¼ miles, making a total of 3667 miles of sewers now in the City system.

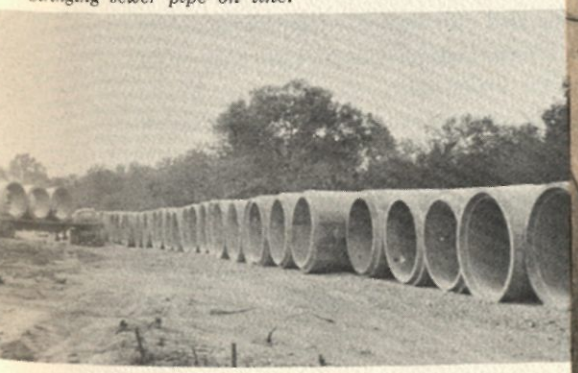
Including the additions to the sewer system in 1957, all of Chicago's 222 square miles have been sewered at least once, with the exception of an area of 5 or 6 square miles near Lake Calumet, 7 newly annexed small fringe areas and a few other scattered acres over the city.

In connection with the development of Chicago's Port in the Lake Calumet region, the City in co-operation with the Metropolitan Sanitary District of Chicago is giving intensive study to the matter of proper drainage of the land area around Lake Calumet. To provide adequate sewer service to this unsewered area and also to provide storm relief for portions of the South Chicago area, it will be necessary to construct a large pumping station at some point below the lock to be built by the U. S. Government in the Calumet River at about 135th Street.

One of the recently annexed western areas—that just south of Lawrence Avenue—is the third such area from which the storm overflow is to be drained into the Desplaines River. A 6-foot storm overflow sewer through forest preserve land near the line of Wilson Avenue was constructed by Bureau of Sewers work forces during the year. Also, two small storm overflows were built to the North Branch of the Chicago River.

Since 1900, some 150 miles of sewers from small sizes up to 18 feet in diameter have been built to relieve storm water flood conditions in the City. About 38 miles of this total were constructed under special assessment before 1933 and about 22 miles by WPA between 1936 and 1941. The balance of about 90 miles was paid for from general sewer bond funds and accounts for something over 65% of the total of about $125,000,000 spent for sewer construction to date for flood relief.

Wilson Avenue Extension—
Stringing sewer pipe on line.



Tunneling to avoid opening a heavily traveled street.

Wilson Avenue Extension—
Six foot sewer at Desplaines River.

Beverly-Calumet System—Trench and shoring in open cut section in Morgan Street.

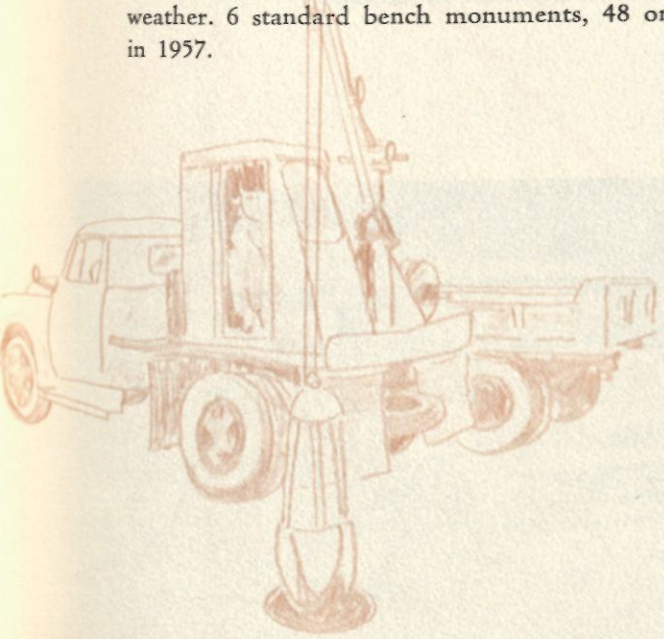
Sewers

Even with the stepped up auxiliary outlet sewer construction program, particularly since 1948, drainage authorities are still left with some difficult problems in connection with the disposal of flood waters from storms over the metropolitan area. When the Drainage Canal, opened in 1900, was fully functioning in 1910, the trunk sewers of the City discharging into the canal were able to use its full capacity for disposal of flood waters. Auxiliary outlet sewers built since then carry so much more water that, in the storms of 1954 and 1957, the North Shore Channel rose 10 feet or more, and the Calumet Sag Channel rose 6 or 7 feet. In these instances the canal discharged at Lockport about 28,000 cubic feet per second, or about three times the load for which it was designed. Even though this additional load was carried, basements and subways in some areas of the City still flooded during these two unusually intense storms. Under similar conditions, regardless of the amount of additional auxiliary outlet sewers that may be built, some flooding conditions will continue until greater capacity is provided in the rivers and canals to handle the additional flood waters carried to them by the sewer system.

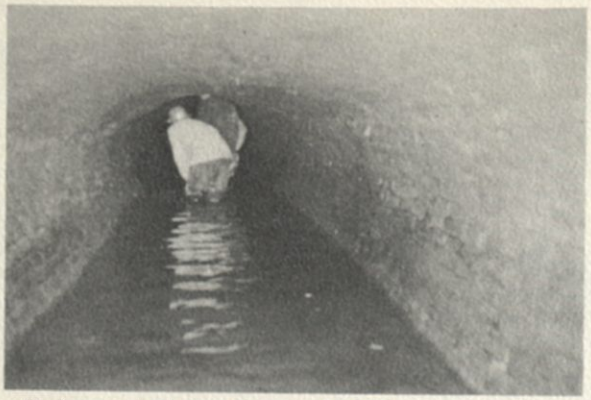
As custodian of the City sewer system, the Bureau of Sewers is responsible for checking and approving all plans involving any changes or additions to the public sewer system and must keep up to date the sewer and drain atlases maintained by the Bureau. During the year the shortage of trained engineering personnel has been a handicap in discharging these responsibilities most effectively.

Above—modern power scraper removing dirt from sewer to keep flow at a maximum.

A lesser known function of the Bureau of Sewers is the establishment of street grades and ordinary benches and the construction and maintenance of standard bench monuments, including the establishment, by precise leveling, of their elevations based on Chicago datum (579.88 feet above New York mean tide). These monuments are occasionally destroyed during various types of construction and must be re-established. Also, new monuments must be built and established in various sections of the City. Bench work is very tedious and exacting, requiring the running and rechecking of miles of precise levels and it is work than can only be done in very favorable weather. 6 standard bench monuments, 48 ordinary benches and 117 street grades were established in 1957.



116th Street & St. Louis Avenue—Sewer construction in outlying district—8 foot 6 inch diameter reinforced concrete pipe.



Engineers check condition of old brick sewer.

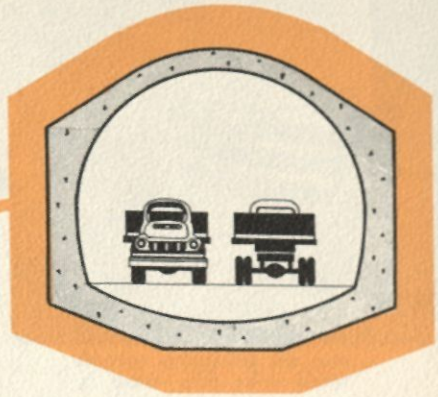
Sewers

The significant increase in traffic loads and speeds and the resulting pounding transmitted to sewer facilities results in the breakdown of older sewers, both tile and brick, and the impairment of manhole foundations and covers. This increase in traffic over the days of the 6 ton maximum load behind horses traveling at 4 miles an hour has caused a considerable increase in the amount of repair work that must be done by the Bureau. In years past many of the older and larger sewers were built through open areas even before the properties were subdivided. They were improperly backfilled and the loose dirt did not give sufficient support to the brick or tile arches. The effect of some of these conditions is shown on this page in the picture of the 50 year old 5½ foot sewer which shows the moderate distortion of the sewer, a condition that had existed for a number of years when this picture was taken in 1957. Having a good knowledge of the existence of these conditions over the City permits the Bureau to make timely repairs so that only rarely does a serious break occur.

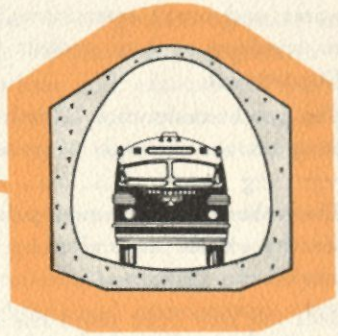
Since 1953, the Bureau of Sewers has stepped up the rate and thoroughness of its cleaning and repair activities. It has also made substantial additions to its fleet of sewer cleaning and repair equipment in order to do an even better job of keeping the 3667 miles of sewers in good working order. During 1957, 3 new trucks, 3 air compressors with various air tools, 3 sump pumps and miscellaneous minor equipment were added to the Bureau's complement of equipment. Through the radio communications system, Bureau work crews can be dispatched promptly at any hour of the day or night to make emergency repairs in the system anywhere in Chicago.

Truck-mounted compressor added this year to the Bureau of Sewers equipment pool.

COMPARISON OF SIZE OF LARGE OUTLET SEWERS

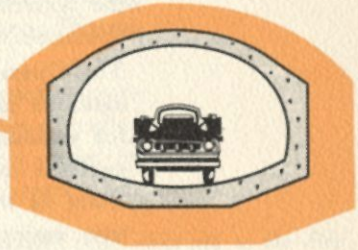


This 21½ x 19-1/3 foot sewer in Leamington Ave. is for relief between Western Ave. and Central Ave. south of the Drainage Canal. It is the largest sewer built by the City in 50 years.



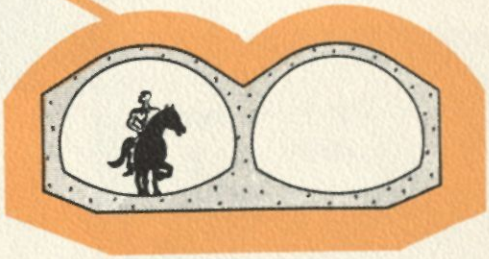
The 14-2/3 x 16¼ foot Laflin St. section of the Beverly-Calumet sewer (111th St. to 121st St.) is the second largest in this project.

West of Sawyer Ave. the Wrightwood Ave. sewer is 16½ x 11 feet. The flat section is used where the sewer is not so deep.

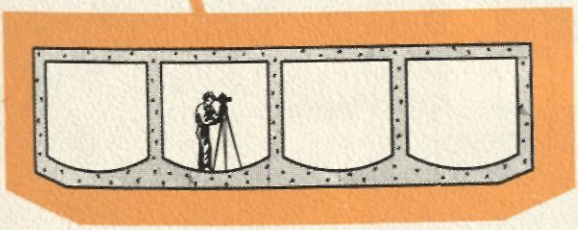


This double barrel section (each 13 x 10-1/3 feet) is used in Logan Blvd. where the depth is comparatively shallow.

Quincy and LaSalle Sts.—this special section is necessary because of unusual tunnel conditions. It is 9 x 7¼ feet.



A four barrel sewer (each barrel 8 x 8½ feet) was used to keep the roof low enough on Roscoe St. east of California Ave. Diagrams prepared by the Department of Public Works, Sewer Design Division.



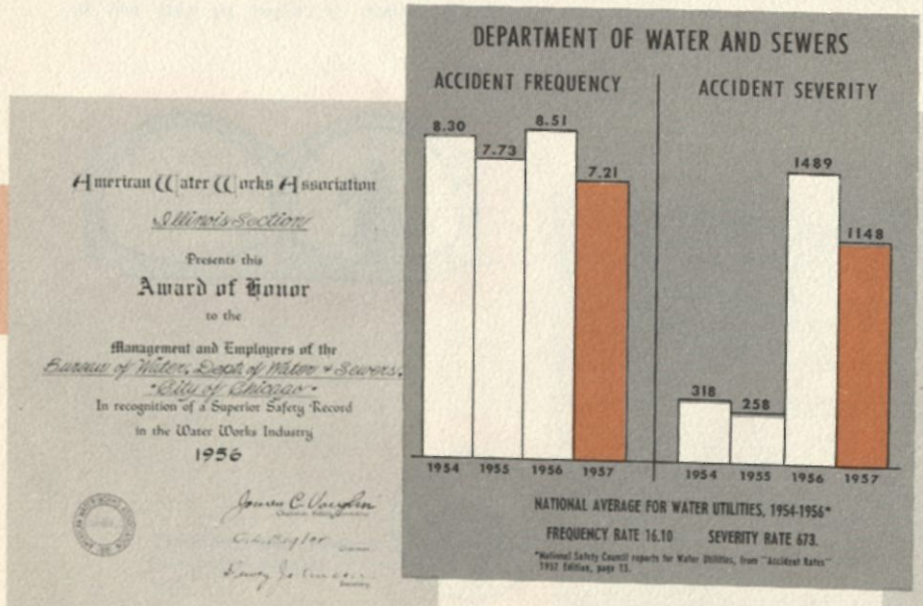
Safety

Chicago was one of the first large cities in the country to develop and put into effect in its water and sewer operations, a formal safety program designed to reduce employee injuries due to accidents and to protect the public from accidents that might result from the work of this Department.

The good results that have been obtained by the intensive promotion of this comprehensive safety program are strongly supported by the data compiled from the Department's meticulous accident reporting system. Lost time due to accidents cannot be recovered and it increases operating costs. The reduction in human pain and in lost time due to work accidents has more than compensated for the efforts expended in the intensive promotion of safe work practices throughout the activities of the Department.

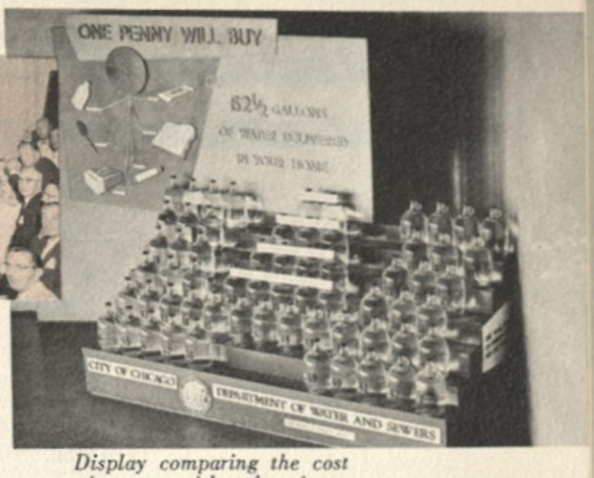
Over the past four years the average accident frequency and severity rates for the Department have been consistently below those reported for Water Utilities in general by the National Safety Council, of which the Department is a member. The Department received two Awards of Honor from the American Water Works Association in recognition of its superior safety record in water works operation, one for the year 1956 and one for the year 1957.

The Operating Methods staff continued effectively to evaluate organization practices and work methods in the Department and to prepare manuals of approved standard operating practices for various operations in the Department. Among other projects during the year, the staff was engaged in preparing manuals for the operation of the pumping station units and undertook the study of methods and the preparation of manuals in the large division responsible for the operation, maintenance and construction of the water distribution system.



At the Chicagoland Fair—a joint exhibit of the Department of Water and Sewers and the Department of Public Works.

Department personnel participate in meeting of Illinois Section of American Water Works Association.



Display comparing the cost of water with other items used every day.

The staff is fully aware that the best interests of the Department can only be served if wholehearted cooperation is extended in every way possible to the public, other public agencies and private organizations. The principal aim of the Department's public information program is to bring to these other agencies, neighborhood improvement organizations and educational institutions the fullest information possible concerning the various phases in the operation of the water and sewer systems and the plans under way for the future development of these important public facilities and services.

The Department made available for distribution to students and other interested individuals and groups, brochures describing the water and sewer systems, including statistics on their operation. Numerous inspection trips through the pumping stations, the filtration plant and other system facilities were scheduled for schools, colleges and universities, neighborhood associations, technical societies and engineers visiting the Department from various parts of the United States and some foreign countries.

The staff of the Department offered a helping hand to several neighboring communities during emergencies; for example, technical advice and aid were given to the City of Waukegan, Illinois, after a serious water main break on October 17, 1957.

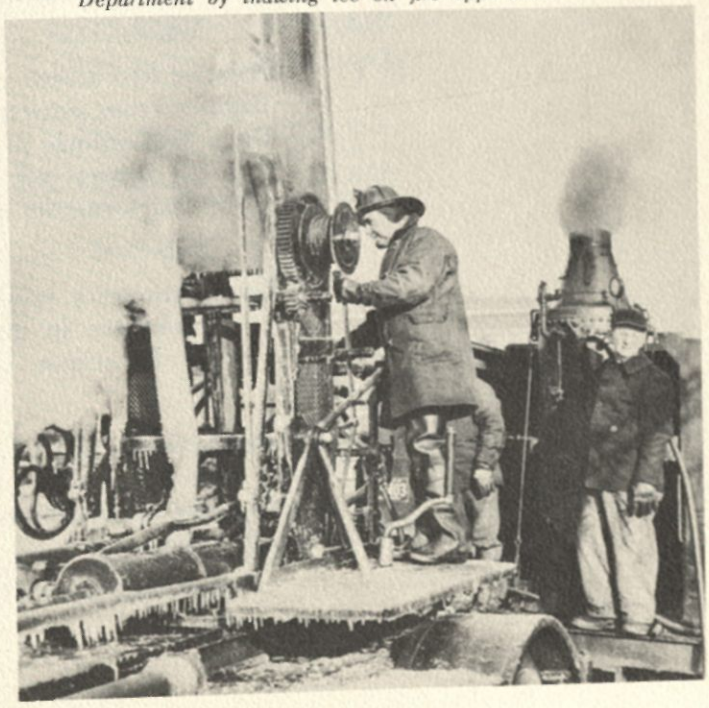
Lectures were given at the Plumbing Testing Laboratory to groups from both educational institutions and industry. Architects, engineers, tradesmen, welfare and health organizations availed themselves of the results of the laboratory's findings concerning tests run on various types of water-using appliances, devices and equipment. The filtration plant laboratory facilities were made available to the Chicago Park District for special bathing beach and swimming pool sanitation studies.

It is the policy of this Department to cooperate in every way possible with all public and private agencies and groups concerned with the problems of water supply and drainage in the Chicago metropolitan area.

Key personnel of the Department were made available to the Federal Civil Defense Authority for participation in the nation-wide test exercise "Operation Alert 1957" during the period from June 25 to July 14, 1957. The Federal Civil Defense Authority is now re-assessing its plans, and in accordance with instructions the key civil defense organization of this Department will remain intact on a stand-by basis.

Cooperating with others

One of Water Distribution's mobile steamer units gives aid to the Fire Department by thawing ice on fire apparatus.



Water Fund
Revenue and Expenditures

REVENUES

% of Total		
97.0	Water bills paid	$36,660,868
.3	Fees for new service outlets	94,569
.9	Steam service furnished to City and County	337,761
.1	Interest received from deposits and investments	199,088
.2	Interest and premium on sale of certificates	67,166
.1	Sale of land	53,000
1.4	Rents and miscellaneous	528,548
	Total Revenue	$37,941,000

Expenditures for Operation and Debt Service

% of Total		
	Total Revenue	$37,941,000
44.9	Cost of operations	$17,038,199
25.5	Repairs and maintenance	9,688,166
—	Judgments	11,855
12.5	Redemption of certificates	4,750,000
5.9	Interest on certificates and judgments	2,237,890
.1	Refunds on assessments	21,892
	Total	$33,748,002
11.1	Balance of current revenue	$ 4,192,998
	Balance from prior years to January 1, 1957	5,984,983
	Plus: Collections of accounts receivable previously written off	1,194
	Adjustments of prior year's expense	65
	Sub-total	$10,179,240
	Less: Accounts receivable written off	210,000
	Increase in reserve set up for Water Pipe Extension Certificates	31,615
		$ 241,615
	Available for capital expenditures and Debt Service Reserve	$ 9,937,625
	Capital improvements from Revenue in 1957	288,029
	December 31, 1957, balance available for Capital expenditures and Debt Service Reserve	$ 9,649,596

WATER FUND CERTIFICATES OF INDEBTEDNESS

Balance 1/1/57	$ 5,512,395
Certificates issued in 1957	35,000,000
Add: Adjustment of prior year's expense	7,000
Interest on investments and miscellaneous income	99,666
	$40,619,061
Construction and improvements	22,137,627
Balance 12/31/57	$18,481,434

OTHER CASH ACCOUNTS

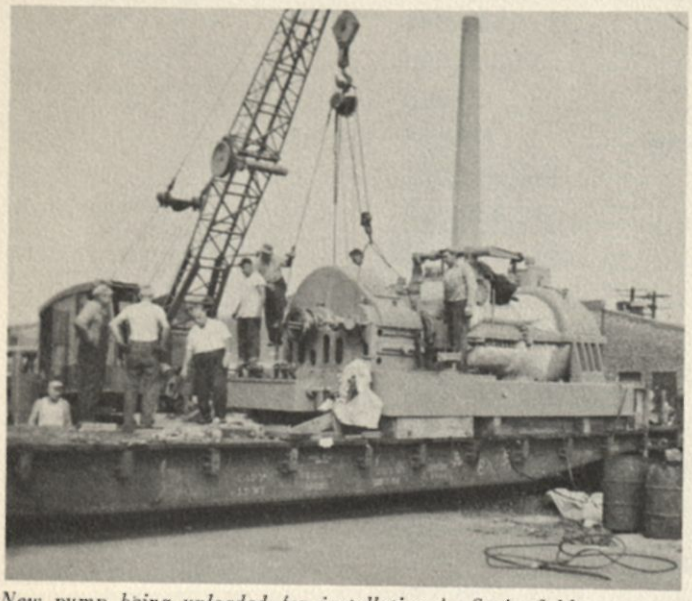
State grant for Central District Filtration Plant	$ 337,220
Cash reserve for redemption of Water Pipe Extension Certificates	238,491

1957 EXPENDITURES FOR WATER WORKS CAPITAL IMPROVEMENTS

Water Works Construction	Source of Funds: Revenue	Source of Funds: Water Certificates	Total
Water Mains	$ 811	$ 4,791,342	$ 4,792,153
Filtration (Central)	—	5,969,671	5,969,671
Filtration (Central) Tunnel	—	6,143,809	6,143,809
Tunnel—79th Street	—	1,515,442	1,515,442
Pumping Stations and Miscellaneous	287,218	3,717,363	4,004,581
Total	$288,029	$22,137,627	$22,425,656

The above tabulation represents a preliminary financial summary of the water fund.
Final financial statements will be included in the City Comptroller's Report for 1957.

Capital Improvement Program



New pump being unloaded for installation in Springfield Avenue Pumping Station.

SUMMARY OF 5 YEAR CAPITAL IMPROVEMENT PROGRAM 1958-1962

MAJOR WATER WORKS IMPROVEMENTS . . . CHICAGO WATER WORKS SYSTEM

(Subject to annual revisions and approval of the City Council)

Description	Estimated Cost
TUNNELS AND SHAFTS	
Connecting tunnels and shafts, Central District Filtration Plant—to complete	$ 8,600,000
South District Filtration Plant to Stewart Ave.—16 foot tunnel—to complete	6,700,000
Western Ave. and 73rd St. to new Southwest Pumping Station—12 foot tunnel	4,200,000
FILTRATION PLANTS	
Central District Plant—to complete	70,944,000
South District Filtration Plant—additional settling basins, filters and miscellaneous	9,000,000
PUMPING STATIONS	
New Southwest Pumping Station	3,200,000
Replacement of new boilers—higher capacity pumps and appurtenances—alterations and miscellaneous construction in 11 Pumping Stations	10,214,000
WATER MAIN CONSTRUCTION	
Feeder mains, small main extensions and miscellaneous	41,734,000
TOTAL, 5 YEAR CAPITAL IMPROVEMENT PROGRAM	$154,592,000

(The Department of Public Works and the Department of Water and Sewers cooperated in the development of this 5 Year Water Works Capital Improvements Program. The program has been approved by the Department of City Planning, City of Chicago.)

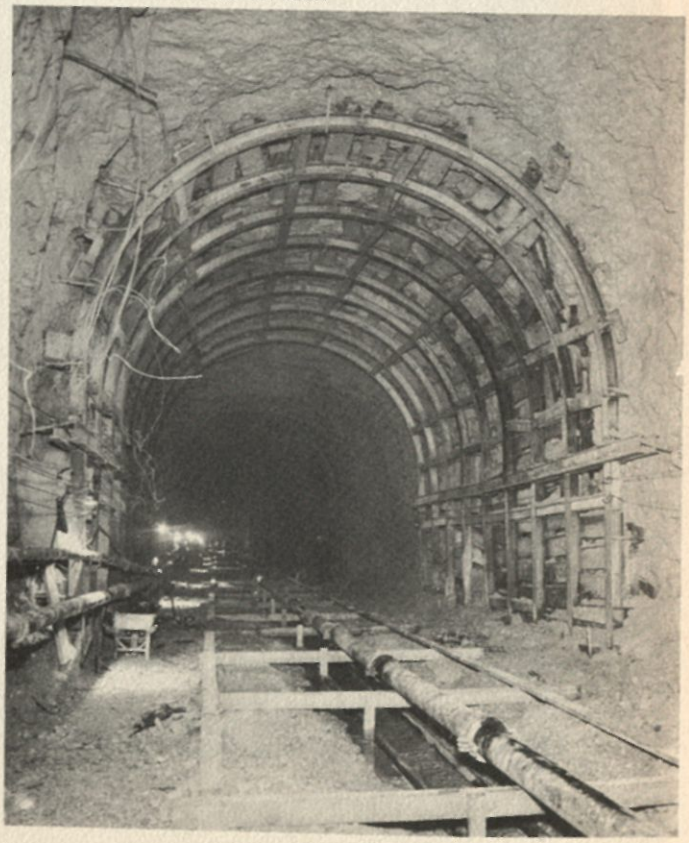
Development of plans for the construction of future capital improvement projects in the Chicago Water Works System is one of the most important functions of the management and engineering staffs of the Department. The staff of this Department, in cooperation with that of the Department of Public Works, developed and documented during 1957 the 5 Year Program of Water Works Capital Improvements for the period 1958 through 1962. The details of this program are shown in the tabulation on this page.

The design and construction of water mains is the responsibility of the Department of Water and Sewers. The responsibility for the design and supervision of the construction of all other water works capital improvements is the responsibility of the Department of Public Works.

The engineering staff of the Department of Water and Sewers is constantly revising the plans for the future development of the water works system to keep it in gear with the future development of Chicago and its surrounding suburban communities which, together with Chicago, compose the Chicago Metropolitan Area.

During 1957, a total of $22,425,656 was expended for water works construction. Of this amount $4,792,153 was spent for water main construction; $5,969,671 for the new Central District Filtration Plant construction; $7,659,251 for the construction of tunnels; and $4,004,581 for the construction of pumping station improvements.

Twenty foot water tunnel under construction for the Central District Filtration Plant.



CENTRAL DISTRICT FILTRATION PLANT being built north of Navy Pier—huge 68 million gallon filtered water reservoir was completed during 1957 and much work was done on the filter substructures. This plant will occupy 61 acres of made land and will supply approximately 3 million people with clear, palatable water.

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